

FEBRUARY  
1953

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# CHEMICAL PROCESSING

## *Highlights*

of This Issue

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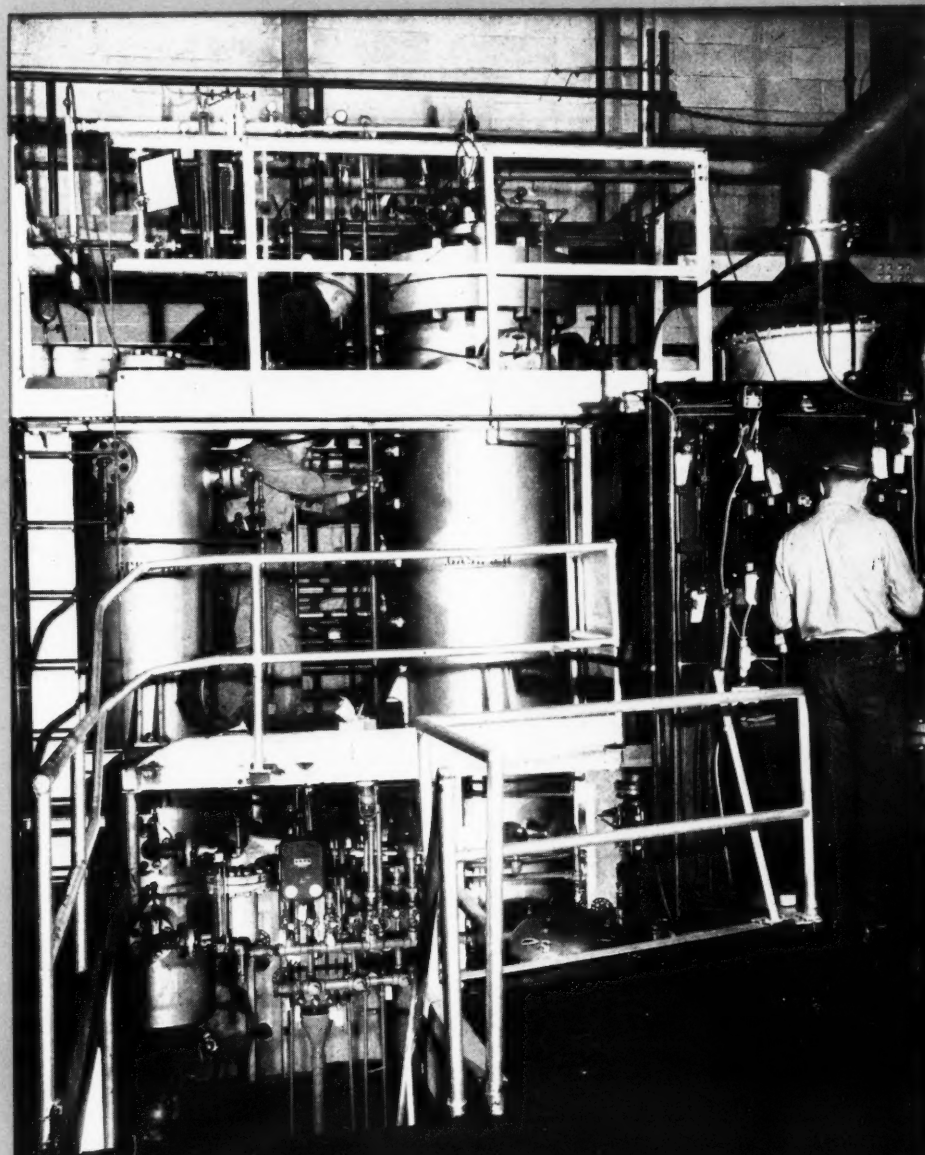
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## *The Cover Picture*

Part of Bureau of Mines  
high-pressure coal gasifi-  
cation pilot plant at Mor-  
gantown, W. Va. Fluidized  
feeder used at plant is  
shown on Page 6

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Creators of PUTMAN-STYLE Magazines  
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readership; hence more READER ACTION



(Continued on page 4)

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## "That's Interesting"

**Napalm carried one step further —  
solid gasoline**

A patent has recently been granted to Karl A. Fischer and Otto F. Hecht for a process which transforms gasoline and other liquid hydrocarbon fuels into a solid state. The uniform-sized pellets can be stored unprotected in open air and are intended to simplify the transportation and stockpiling of liquid fuels. It is reported that the pellets are insoluble in both water and gasoline, burn slowly and evenly, and that nearly complete recovery of liquid fuel can be obtained by the simple process of shredding and pressing the pellets.

**Strong tape opens cartons  
like a cigarette pack**

Tools are not required to open cartons sealed with a tape devised by Minnesota Mining and Mfg. Co., St. Paul, Minn. Working on the principle of the cellophane tab on a pack of cigarettes, the tape is strong enough (up to 350 lb) to pull open a fiberboard carton by cutting through its heavy sides. Applied by automatic machine, the tape should save time and eliminate damage to contents from opening tools.

**10-power illuminated magnifier  
clips into pocket like pen**

Inspection operations and reading fine scales on lab apparatus are two specific applications of an inexpensive 10-power magnifier that can be clipped into pocket and carried like a fountain pen.

It weighs only 2½ oz including the penlight batteries and bulb. Because a 10-power magnifier is most effectively used when held directly to the eye and less than an inch from the object, built-in illumination is utilized to observe the fine detail for which magnifier is intended. (Bausch & Lomb Optical Co., Rochester 2, N. Y.)

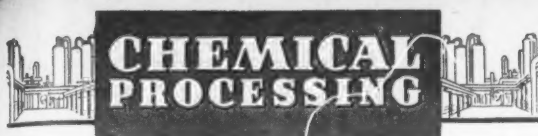
**Kills cable capers**

It is a known fact that strong winds will cause wire cables to oscillate as much as four feet (amplitude) in a destructive vibration that will wear the cable sheath and strand, tear out pole supports, and even snap the poles in two. A recent development reported in the *Bell Laboratories Record* is intended to stop this cable "dancing." The damping action is produced by a weight which floats on a spring inside a hermetically sealed cylinder of slightly larger diameter than the weight. As the cylinder moves up and down in response to cable movement, the weight tends to remain stationary. Resultant frictional energy loss effectively damps the cable motion.

**Movie shutter is 4000 times faster  
than box-type Brownie**

A high-speed motion-picture camera with shutter speeds up to 4000 times faster than the box-type Brownie is being used to study phenomena which occur at velocities up to 4800 mph. Camera operates at speeds up to 1/100,000 of a second and has been built to range from 10,000 to 100,000 frames per second. It can retard, or for practical purposes, stop the motion that makes extremely high-speed events invisible. Later projection of a series of these movie "stills," creates a slow motion effect to enable the observer to see the so-called invisible. (Battelle Memorial Institute, Columbus 1, Ohio)





(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 16

February, 1953

No. 2

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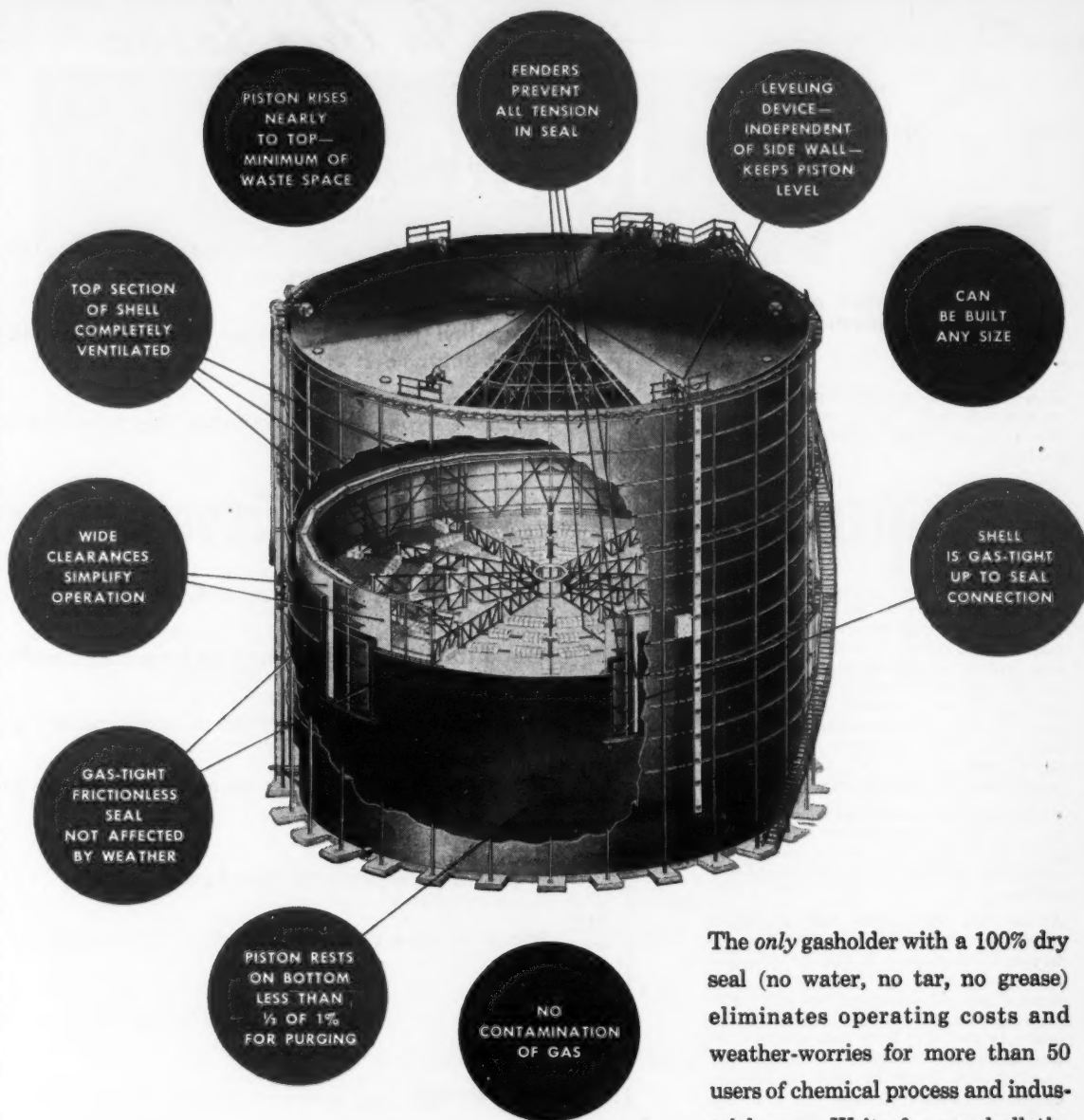
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FEBRUARY, 1953

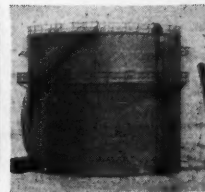
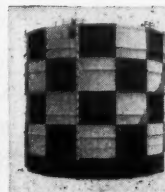
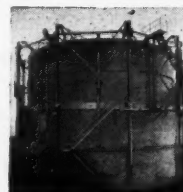


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# In this Issue



**Improved processes and products**

As we visit plants and talk to processing men, we note that more and more emphasis is being placed on improving present processes and products.

This is confirmed in the capital expenditures of one large chemical company which, in 1952, spent 80% of its outlay for streamlining current chemical operations and only 20% for new products and plants.

Recently adopted labor saving and maintenance reducing procedures are evident in plants we have been in during the past several weeks. One of these, which is covered in this issue, page 118, is an efficient automatic labeling method. An article soon to appear tells how an operation has been facilitated by "change tank" mixers. A third coming up soon concerns a procedure for continuously recording the viscosity of resins and polymers in large reactors at processing temperatures.

Another story to be published in a forthcoming issue is about the manufacture of lithium base grease by a continuous process. This information was obtained at a pilot plant demonstration.

At the Paint Show, many spoke of the increased use of odorless solvents in paint and lacquer formulations. At this show, as well as at several others, corrosion-resistant equipment, mechanical operations, and better ways of doing things seemed more in evidence than ever. Another story to be carried before long that should prove interesting will describe how plastic pumps are being used for handling corrosives in a chemical plant.

As we prepare to write these articles on more efficient methods, we ask the objective opinion of processing men about the procedure and the equipment or materials involved. We take photographs of the new operation in action — and of the old whenever possible.

After the facts and photographs are assembled, the article is written as clearly, simply, and briefly as possible. In the months ahead, we shall strive to bring you many more of these better ideas to help you with your processing problems.

*Gordon Weyermuller*

ASSISTANT EDITOR

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3. If you want to subscribe to this magazine, see reader-qualification form opposite page 3

## Utilizing Technical Supervision for Efficient Production

This editorial has been written at the request of the editors  
of CHEMICAL PROCESSING . . . and is authored by

Mr. Donald H. Sheffield, Asst. Director of Operations,  
Naval Stores Dept., Hercules Power Company



Graduated from Carleton College, Northfield, Minn., with major in chemistry and economics. Received M. S. degree in organic chemistry from Ohio State University, Columbus, Ohio.

Joined Hercules in 1929 and served as chemist at Kenil, N. J., and Brunswick, Ga. Remained in plant operations until 1940, when he was transferred to the Naval Stores Dept. home office Operating Div. In January, 1952, he

was appointed Asst. Director of Operations of that department.

Mr. Sheffield is a member of the American Chemical Society and American Institute of Chemical Engineers.

THE chemical industry plays its part in our present economy by adding together varied and changeable aspects of engineering and chemical knowledge, raw materials, equipment, men, and money to obtain as an answer the sum of satisfied customers plus a profit. This is the basic formula of production.

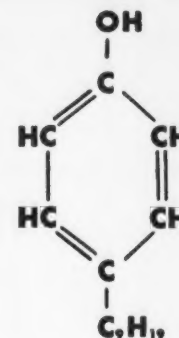
The successful application of this arithmetic is a challenge to plant chemists and chemical engineers, who are specialists in the art of changing the chemical form of raw materials to provide product values needed in an ever-changing economy. This challenge is a continuing one, because on one hand there is nothing so well done that it cannot be done better, or at lower cost; and, on the other hand, changes in demand or developments in the economy will shift product requirements.

At Hercules, we are meeting this challenge by staffing plant management and supervision with technically trained men. Their primary responsibility is to apply the knowledge of their particular fields to produce quality products at lowest cost. However, their spheres of responsibility are divided into two areas — production supervision and technical supervision. Production supervisors have the background to understand and appreciate the scientific approach to production problems. It is also essential to supplement production supervision with technical supervisors who are able to take the lead in the practical application of technology and to provide effective coordination and teamwork between the two groups.

The primary responsibility of the production supervisor is operations — employing raw materials, equipment, and men at his disposal to produce a uniform product meeting established specifications. How he does this, his use of engineering, maintenance, good

(Continued on page 213)

# NONYL PHENOL



*Commercial*  
now available in ~~pilot plant~~ quantities

### Description:

Jefferson's nonyl phenol is a mixture of monoalkyl phenols, predominantly para substituted and is a clear viscous liquid. The side chains are isomeric branched alkyl radicals. Some physical properties of a representative sample are:

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Hydroxyl number	255
Color, Pt-Co scale	200
Refractive index, 20°C	1.5140
Flash point (TOC), °F	300
Pour point, °C	2
Distillation range, °C	
IBP	290
5 ml.	293
95 ml.	297
EP	301

### Suggested Uses:

1. An intermediate for non-ionic detergents
2. A stabilizer for ethyl cellulose
3. A plasticizer for cellulose esters
4. An intermediate for other plasticizers
5. A starting material for production of lubricating oil additives and rubber chemicals
6. An antioxidant

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**Jefferson**  
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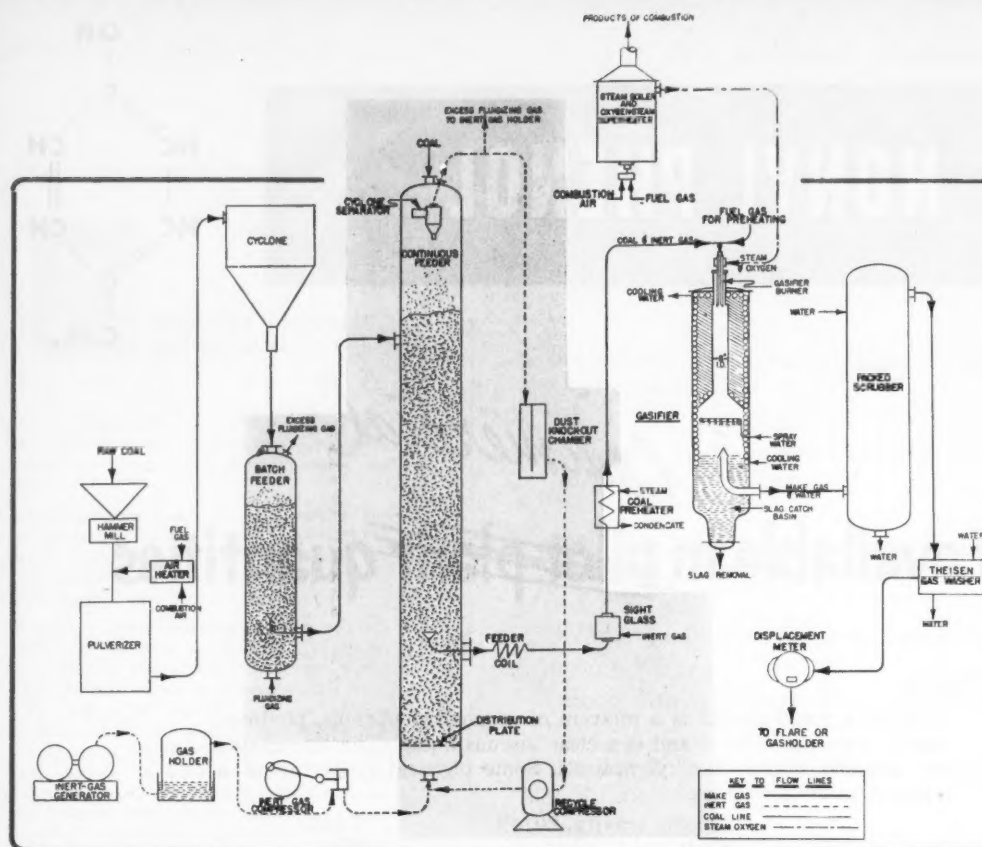
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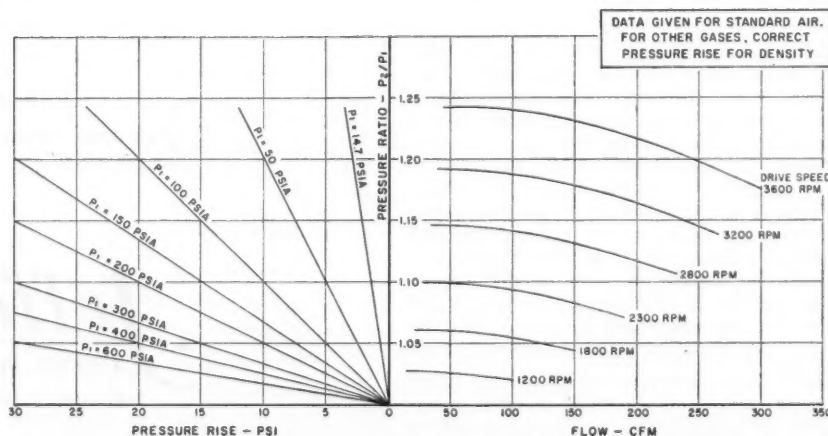
The fluidized coal feed arrangement (blocked portion in diagram) developed by the U. S. Bureau of Mines for feeding coal to a pressure gasifier has possibilities for other applications beside the one at Morgantown. For instance, it could probably be used for 1) delivering solids to reactors for heterogeneous reactions, particularly where uniform addition of the solid with respect to time is desired; 2) proportioning and mixing one solid with another; 3) mixing a solid with a gas in desired proportions; 4) transferring heat to a flowing stream of solid and gas inside of a tube; 5) pneumatic conveying. Coal is fluidized in the pressurized feeder by inert gas recycled by the recycle compressor, which maintains a bed density of about 20 pounds per cubic foot. A dense, fluidized stream flows continuously, through a calibrated coil, to the pressure gasifier. Excess fluidizing gas leaves the top of the feeder through an internal centrifugal dust collector, passes through a heat exchanger (not shown in diagram) to remove heat of compression being picked up in the recycle compressor, passes through a knockout chamber for further de-dusting, and is recompressed by the compressor. A small amount of inert gas is added continuously to replace conveying gas leaving feeder with coal. Several simplifications could be made when applying this feeder on a commercial gasifier. The fluidizing gas could be tail gas, and the recycle compressor could be run at constant speed and on bypass control. The fluidizing gas used now at the pilot plant is a mixture of nitrogen and carbon dioxide from a new seven-ton-per-day oxygen plant which makes 95% oxygen for the gasification reaction. The recycle compressor is set up so that its operation can be changed over a broad range, something that would not be necessary in a commercial plant. To maintain continuous feed in a commercial installation, a relatively smaller feeder could be used, with frequent recharging by a local-fluidization pressurized hopper.

## Fluidized Feeder Using Centrifugal Compressor for 70 to 5000 cfm at Static Pressures to 600 psig

**High-speed unit recycles fluidizing gas containing small amount of abrasive coal dust at Bureau of Mines coal gasification pilot plant**

**PROBLEM:** About two years ago, the U.S. Bureau of Mines started up a high-pressure coal gasification pilot plant at Morgantown, West Virginia. Purpose of this was the same as the Bureau's existing atmospheric pressure gasification set-ups — to produce synthesis gas high in CO and H<sub>2</sub> content by reacting pulverized coal, superheated steam and oxygen. This research is part of the Interior Department agency's studies in the production of synthetic liquid fuels from raw coal by the modified Fischer-Tropsch process and other methods.

During construction of the plant, it became necessary to design a special



These plots show performance ratings of the recycle compressor being used on the coal feeding application at the Bureau of Mines pilot plant in Morgantown, W. Va. P<sub>2</sub> represents the absolute discharge pressure, and P<sub>1</sub> represents the absolute suction pressure

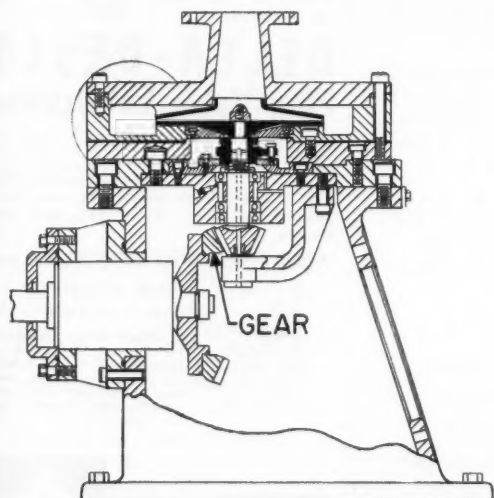


This high-speed centrifugal compressor recycles inert gas in the fluidized coal feeding arrangement

fluidized feeder (shown in accompanying drawing). This pressure vessel, 34 feet high and 3 feet in diameter, holds a fluidized bed of coal, pulverized to pass 90% through 200 mesh. The bed is kept in a fluidized state by passing inert gas (nitrogen and carbon dioxide mixture) up through it at the superficial velocity of 0.1 to 0.2 foot per second.

To save compressor horsepower, it was obvious that the fluidizing gas should be recycled, adding fresh inert gas to make up that going over in the stream to the coal gasifier. Since the recycle gas was contaminated with coal (an abrasive) at a loading of about 6 grains per 100 actual cubic feet at the inlet to the recycle compressor, and since no oil could be tolerated in the gas, a centrifugal type compressor offered the most promise for this job. However, the flows were much too

(Continued on next page)



Simplified drawing of the internal construction of recycle compressor used at Morgantown. All parts contacting gas are stainless steel. A specially adapted Duraseal prevents gas from escaping around the rotating shafts despite the high speeds attained by the compressor. The seal is lubricated by oil, but none reaches the gas itself. A seal oil accumulator is emptied periodically, according to operation of a timer. This prevents too high a build-up of pressure on the seal, but assures sufficient lubrication



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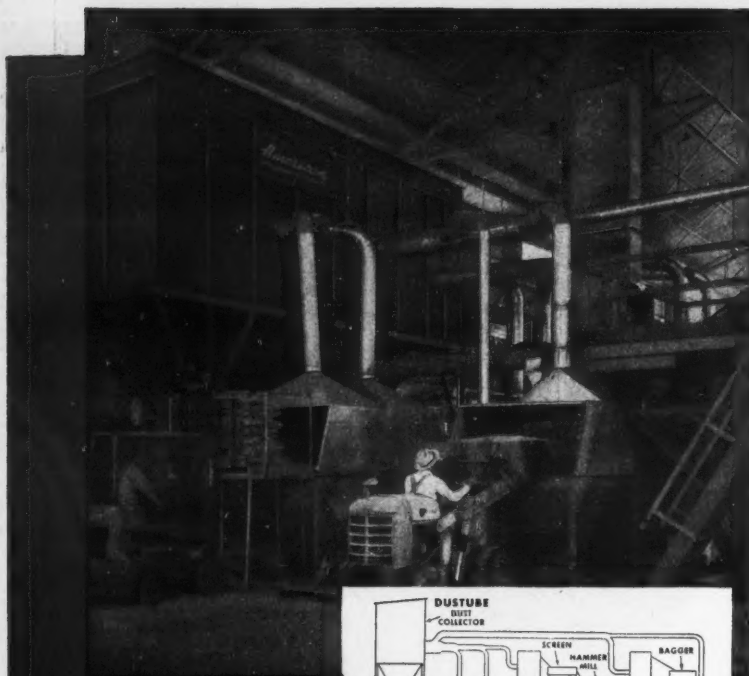
The small impregnator illustrated above at the left measures only 36" in diameter. It is one of a battery of four especially designed and precision-built by Acme to meet specific conditions for a dock installation.

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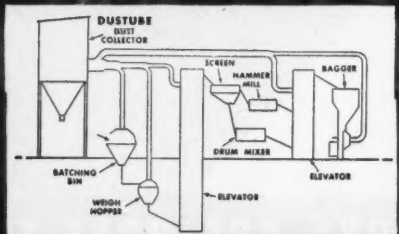
Whether your processing problem is a midget or a giant in size—whether it encompasses engineering and design or fabrication alone—at Acme you will find the skill, the equipment and experience to insure the most economical solution.



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## NEW SOLUTIONS of processing problems

(Continued from preceding page)

low and the static pressure much too high for commercial centrifugal units available at that time. Specifications set by the Bureau required flows as low as 100 actual cfm at static pressures ranging from 60 to 500 psig.

**Solution:** The Bureau of Mines and Sawyer Bailey Corporation worked together in designing a centrifugal compressor with a variable-speed drive to meet the Morgantown needs. The unit was built to operate at a maximum speed of 14,000 rpm and at static pressures from 1 atmosphere absolute to 500 psig, but it has been used up to 600 psig. Flow rate can be varied from zero to 5000 scfm, but for this installation a range of 70 to 5000 scfm is desired. Pressure rise across the compressor can be set to go as high as 50 psig, but most of the time a rise closer to 25 psig is required. A change in specific gravity of the recycle gas from 0.55 to 1.2 can be handled satisfactorily.

An accompanying drawing shows the internal construction of the compressor; performance characteristics are also plotted. The compressor has a 9.5" diameter impeller. All parts contacting the gas are stainless steel. The problem of effectively sealing the rotating shafts against gas leakage has been solved by a special adaptation of Duraseal. The seal is still doing its job satisfactorily after more than 2000 hours of operation.

**Results:** The recycle compressor has provided the wide range of flows at varying static pressures required by the pilot plant work at Morgantown, including ability to recycle flows as small as 70 cfm. After more than 2000 hours of operation there has been little or no wear from the dust carried over in the recycle gas.

(The editors thank Bureau of Mines personnel for help in preparation of this article, especially Mr. J. P. McGee, Chief of Mechanical Engineering Section and Dr. L. D. Schmidt, Chief of Synthesis Gas Branch, both at Morgantown.)

(Centrifugal compressors of this type are being built by Sawyer Bailey Corporation, Dept. CP, 1559 Niagara Street, Buffalo 13, New York . . . or for more information check CP 7567 on handy form, pages 2 and 3.)

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## ANOTHER VALVE SAVER —

**DELTA AUTOMATIC Plug Valve LUBRICATOR**  
A simple device, lubricates valve each time it is opened and closed. Ideal for loading platform, manifold, LPG and other frequently used valves. Ask for catalog.



The Only Complete Plug Valve Lubrication Company

**DELTA**



**ENGINEERING SALES CO.**  
806 Louisiana Ave. Phone 5-2416  
SHREVEPORT, LOUISIANA, U.S.A.  
Sales Offices in All Principal Cities

When inquiring check CP 7568 on handy form, pgs. 2-3

CHEMICAL PROCESSING



# BIG NEWS

for paint & lacquer manufacturers!

The Cowles



## ★ Speeds Resin Cutting

Natural resins, synthetic resins, pigment chips go into solution faster with the Cowles Dissolver!

## ★ Speeds Pre-Mixing

The Cowles Dissolver pre-mixes pigments in vehicles, producing a fast, smooth mix that's ready for further milling or fine grinding. Because it accomplishes some grinding, it enables certain grades of paint to be prepared in one operation.

## ★ Speeds Shading

No slow-down on shading operations with the Cowles Dissolver! Paint can be sent out for sampling, corrected and ready for a second check in less time than previously required. More than one batch can be placed under the machine ready for agitation as soon as checks are complete.

**THE COWLES DISSOLVER** actually dissolves and disperses 2 to 20 times faster in the same space ordinary mixers require. Learn how this high-speed unit can save you time and labor — improve your product and yield per batch.

**SEND FOR** latest Cowles catalog  
**THE COWLES COMPANY, INC.**  
113 Trackside, Cayuga, N.Y.

Please send me your latest Cowles Dissolver Catalog.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY AND STATE \_\_\_\_\_

When inquiring check CP 7569 on handy form, pgs. 2-3

## NEW SOLUTIONS of processing problems

Such solutions are fairly viscous at high cellulose concentrations, a fact which limits workable solids content. If the cellulose is first treated with hydrogen peroxide before dissolving, the viscosity is lowered to a workable range. This peroxygen treatment is promoted by treatment of cellulose in finely ground state and in presence of polyvalent metals, such as copper, manganese, and iron.

Modification of procedure is to treat the cellulose simultaneously with hydrogen peroxide and zincate. Cotton can also be handled in this manner and then used in manufacture of cellulose nitrate. Low viscosity solutions with high solids content can then be made from this modified cellulose nitrate. Ester can also be depolymerized after it has been formed by conventional nitrating methods. A number of other variations of process have been carried out.

Peroxygen compounds have been used successfully in refining operations which may be aimed at lignin removal from cellulosic raw materials or removal of colored impurities. Compounds such as hydrogen peroxide can also be used to advantage in treating viscose filaments and in improving desulfurization of filaments.

(Courtesy of Buffalo Electro-Chemical Co., Incorporated, Department CP, Station B, Buffalo 7, New York.)

## Ups pumping capacity 30% by raising hp ratings of 31 motors . . .

\$50,000 saved by rewinding with silicone insulation instead of buying new motors

**Problem:** Pumping capacity of a production unit in a leading chemical company had to be increased 30%. New and conventional pump motors, and their installations, would cost approximately \$68,200.

**Solution:** Instead of putting in the new 75 hp motors, engineers of the company upped the ratings of 31 existing 50 and 60 hp, 850 rpm motors. This was made possible by rewinding the motors with silicone type (Class H) insulation and running them at 1150 rpm, so that each delivered 75 to 90 hp.

**Results:** Rewinding, plus re-installation on the original mounts, cost about \$19,000 . . . a saving of almost \$50,000 over what the new motors would have cost.

Equally important has been the added life and reliability of the rewound motors. The old 50 and 60 hp motors burned out at the rate of one a month, or 48 failures in 4 years. Only 6 re-wound motors have failed in the past 4 years, despite the fact that they were delivering more power.

(Class H insulation is made with silicones produced by Dow Corning Corporation, Dept. CP, Midland, Mich. . . or for more information check CP 7570 on handy form, pages 2 and 3.)

you can have **NOW**  
... an annunciator system to answer **FUTURE** problems...

Don't let your annunciator system be "frozen" at the design stage or even after installation. So often varied requirements are recognized only after a plant is in operation.

New Universal PANALARM "50" offers the greatest degree of flexibility ever achieved in an annunciator system. This new design not only incorporates basic mechanical and electrical operating improvements. But, it also has built-in versatility capable of simple changes to other operating sequences, functions and forms . . . without re-wiring . . . without change of cabinet or the plug-in units.

**Universal PANALARM "50" provides the flexibility you must have in an annunciator system today, and in providing for the future. Send for new catalog No. 100**

**PANALARM PRODUCTS, INC.**  
6312 North Broadway • Chicago 40, Illinois  
Copyright 1952 Panalarm Products, Inc.

**PANALARM**

When inquiring check CP 7571 on handy form, pgs. 2-3

**Tetraethyl lead analysis time is reduced by 45% with X-ray photometer . . .**

assisted by semi-automatic apparatus that fills and weighs sample cells

X-ray photometer method is reported to reduce time for determination of tetraethyl lead content by as much as 45%. This saving occurs even when samples are analyzed by the fastest chemical means in large batches at average operator time of 18 minutes per test. Analysis time for a single sample is decreased from three hours to ten minutes by the recently developed test method.

Associated with the photometer test is a semi-automatic apparatus for accurately and rapidly filling and weighing the sample cells. Each cell is filled on a torsion balance which is equipped with electrical contacts for instantly closing the solenoid fuel supply valve when the proper sample weight is attained. While operator is obtaining attenuator reading on one sample, device is filling another cell with the next sample to the proper weight.

Standard chemical means for determining TEL content are slow because of digestion, evaporation, and titration. Photometer procedure requires only automatic weighing of sample, manipulation of controls, and computation of results.

Half of X-ray beam passes through an aluminum cell containing the gasoline while other half of beam passes through the aluminum attenuator. Gasoline absorbs X-ray beam in proportion to TEL content. Attenuator is adjusted manually to give equal absorption, using a balance indicating instrument. When computing the result, allowance is made for known (or estimated) sulfur in sample which otherwise would cause a small error.

Data on 210 varied gasoline samples show accuracy of photometer procedure to compare favorably with that of current chemical methods. General Electric photometer is used in test.

(Courtesy of Ethyl Corp., Dept. CP, 100 Park Ave., New York 17, N. Y.)

**Checking hopper level at bagging machine halts short bags . . .**

level indicator accurately tells when level of light, fluffy powder is too low

**Problem:** Filling 50-pound bags of Durite molding powder wasn't too difficult at the Durite plant of the Borden Company in Philadelphia, Pennsylvania.

But there was one problem that popped up every once in a while. Light, fluffy powder (12 mesh and down, running 34 lb/cu ft) was dropped through a chute from above by gravity. Whenever flow in the chute was held up, bagging machine blew up paper bag with air making it look full. When later checks revealed short weight bags, time was wasted while the needed one-or-two pounds of powder were put in with a hand scoop.

**Solution:** In February of 1952 the Durite plant

**110-550 Volt  
MOTOR  
STARTERS**

**Manual      Magnetic      Combination**

**ACROSS-THE-LINE STARTERS** are easy to install and wire—compact enough to be installed on or near the controlled machine. Manual Starters in sizes 0 and 1, Magnetic in sizes 0-7 for motors from fractional to 600 hp, Combination in sizes 0-5. General Purpose and special enclosures to fit every need.

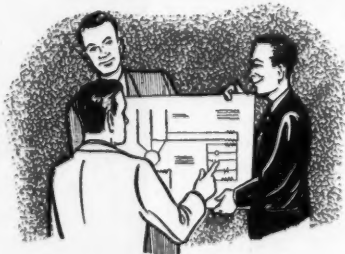
**Manual      Magnetic**

**REDUCED-VOLTAGE STARTERS** are used where the power system has insufficient capacity for full-voltage starting . . . to safeguard machinery or processes from high starting torque or current inrush. Choose from autotransformer, reactor and resistor types. Wide line available.

# STARTERS for

**Choose From This Wide Selection of Generously Designed Starters  
... Backed by Broad Application Experience in Every Industry**

**W**HATEVER YOUR CONTROL NEED — starting, smooth acceleration, speed control, stopping, reversing, dynamic braking — there is an Allis-Chalmers starter to do the job. All are easy to install and have construction features that as-



sure long life, dependable operation, simplified inspection.

**Low-Voltage Starters, Sizes 0-3** for example, have silver-to-silver double break contacts that never require dressing. A screwdriver is the only tool you need for inspection of magnet coils, heaters, contacts — all replaceable parts.

**Sizes 4-7** have time-proven clapper-type contacts with rolling-wiping action to keep current carrying areas clean, free of pitting and arcing. Current is interrupted quickly and arcing minimized by chutes of new design. All electrical and mechanical parts are easily accessible.

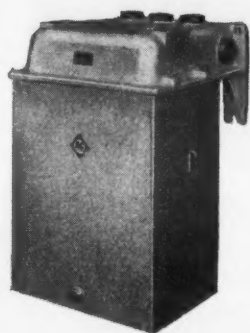
**High-Voltage Starters** give you

everything needed for complete motor control and protection in a single enclosure. Contactors, meters, overload relays, auxiliary switches — all needed parts are selected to meet the requirements of your application. Enclosures are compartmented to isolate high-voltage devices. If you need the short circuit protection of current limiting fuses, specify Type H high-voltage starters.

Remember, A-C application engineers have wide experience serving all industry. Their experience, plus this broad line of starters, is your assurance of the right starter for your job. Call your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

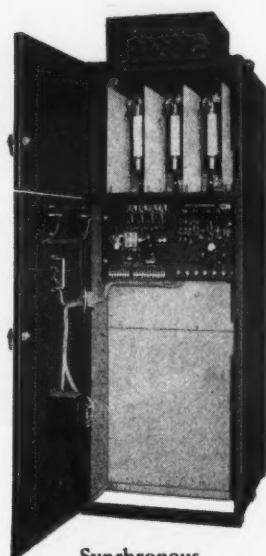


## 2300-5000 Volt MOTOR STARTERS



Squirrel-Cage

**THE TYPE 371** Wall-Mounted Starter for 2300-volt motors is completely sealed . . . protects the completely oil-immersed mechanism from weather, corrosion and dust. Wall mounting saves space.



Synchronous

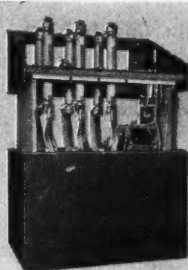
**ALLIS-CHALMERS** Synchronous Motor Starters apply field excitation automatically when proper speed is reached . . . even select the exact half cycle for smoothest field application.



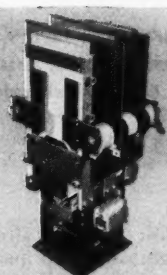
Wound-Rotor

**WOUND-ROTOR** Motor Control for either starting or speed control duty, is built with the number of accelerating points your application requires. High-Voltage Starters are built for motors to 2500 hp.

# Every Motor Need!



**OIL-IMMERSED or AIR-BREAK** — The contactor best suited to your application is standard in Allis-Chalmers high-voltage starters. Both are designed for ready access — built to give long life, low maintenance. Air-break contactors available with interrupting capacity to 50,000 kva.



Allis-Chalmers, Milwaukee 1, Wisconsin

*Send for These*

A-3959

Send me the bulletins indicated below:

- ☐ High-Voltage Starters . . . . . 1486410
- ☐ Type 371 Wall-Mounted Starter . . . . . 1487274
- ☐ Type 256 Air Contactor . . . . . 1487303
- ☐ Low-Voltage Across-the-Line Starters . . . . . 1487132
- ☐ Low-Voltage Reduced-Voltage Starter . . . . . 1487215

Name.....  
Title.....Company.....  
Address.....  
City.....State.....

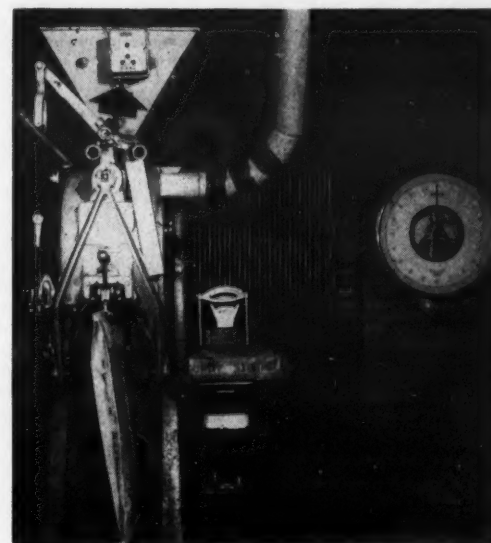
# ALLIS-CHALMERS



When inquiring check CP 7572 on handy form, pgs. 2-3

## NEW SOLUTIONS of processing problems

installed a Tektor bin level indicator on the hopper above the bagging machine. Unit operates electronically using a simple capacity relay circuit. It functions as a result of any slight change in electrical capacity at the probe electrode. Such capacity changes can be due to the approach of any material. It has been used on liquids, water solutions, oils, granular and other free flowing solids, powder, coke, soot, etc. Material in the bin can be electrically conducting or non-conducting and it need not actually touch the surface of the probe in order to operate the instrument.



Level indicator (arrow) immediately shows loss of feed to bagging machine

Liquid level may be controlled to as close as  $\frac{1}{8}$  inch. Instrument unit is  $6\frac{1}{2}$  inch wide by  $7\frac{1}{2}$  inch high and 4 inches deep. It may be seen mounted on the hopper in the accompanying photo.

Now, when flow of molding powder ceases in the chute, red light of the Tektor flashes on showing bagging operator that hopper is starving. Operator can then wait for the hopper to refill and make sure that the bag is filled with molding powder before moving it from the bagger.

**Results:** Though bags are still spot checked at the Durite plant, cases where short weight has been put in the bag have been reduced drastically. In nearly all cases, bagging machine operator has been able to predict which bags, if any, would be short. Operators themselves are pleased with the instrument since it permits them to do a better job without making mistakes. And, there has not been one complaint of short weight from users of the molding powders since installation of this instrument.

(Tektor Level Indicator is a product of Fielden Instrument Division, Robertshaw-Fulton Controls Co., Dept. CP, 2920 N. Fourth Street, Philadelphia 33, Pa. . . . or for more information check CP 7573 on handy form, pages 2 and 3.)



## FABRICATING YOUR STAINLESS STEEL EQUIPMENT *is no cinch!*



*"Not too hot, please"*

Not too much heat—not too little in the welding arc! Stainless steel is tricky to fabricate. Our experienced welders know that improper welding temperature reduces corrosion resistance at the seams. Blickman-controlled welding procedures give you sound, corrosion resistant welds.



*"Shine 'em up"*

Get just the right finish for your application. Working exclusively with stainless steel, we have ALL the tools to produce right in our own plant a finish which assures quicker, more thorough cleaning of your vessel.



*"Inspect my seams again, pal"*

Double check the inspection procedures of your fabricator. Knowing that the properties of the alloy can be impaired during fabrication, we have established rigid shop procedures and inspection methods as an extra guarantee of soundly built vessels.

When you need stainless steel equipment, call in a fabricator who knows how to handle this alloy in his shop.

S. BLICKMAN, INC. • 702 GREGORY AVE., WEEHAUKEN, N. J.

**S. BLICKMAN, INC.**  
Guards Alloys in Fabrication

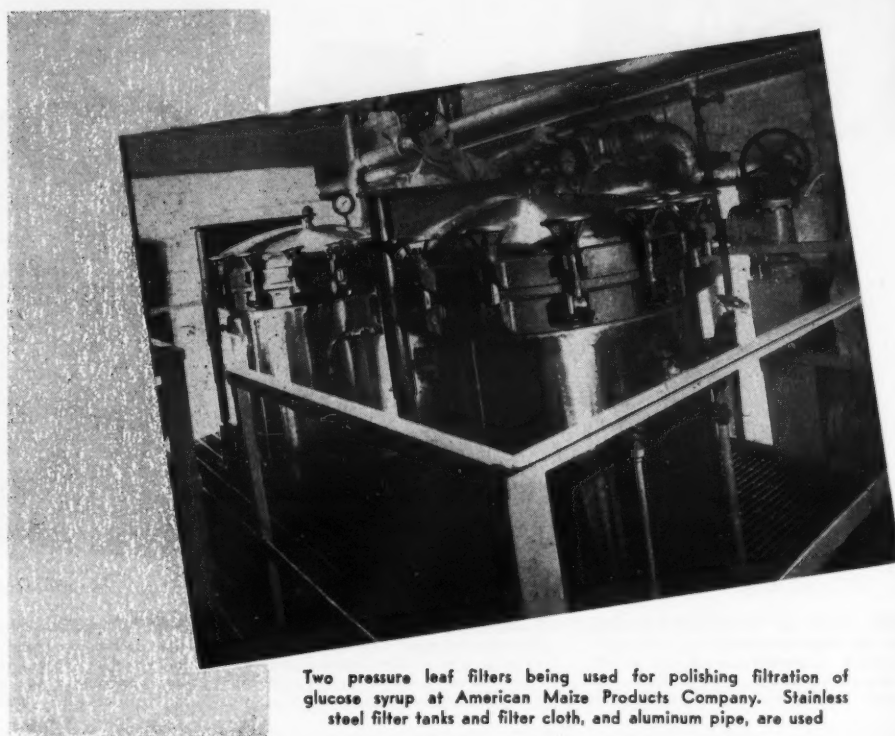
SEND FOR THIS  
VALUABLE BOOK  
A request on your letter-  
head will bring our  
guide, "What to Look  
For When You Specify  
Stainless Steel for Your  
Processing Equipment."



CORROSION RESISTANT PROCESSING EQUIPMENT

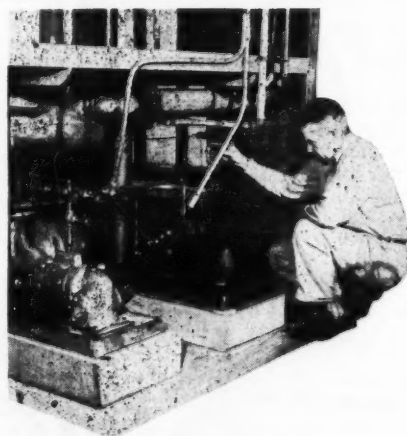


*new solutions  
of processing problems*



Two pressure leaf filters being used for polishing filtration of glucose syrup at American Maize Products Company. Stainless steel filter tanks and filter cloth, and aluminum pipe, are used

## Polish-filtration of Glucose Syrup Prevents Later Product Turbidity



Two controlled volume pumps add a slurry of filter aid to the syrup fed to the pump so that time between cleanings is about three times longer than normal

Pressure leaf filters, placed in line behind bone char filters, assure syrup's meeting National Canners standards

**PROBLEM:** Even after filtering through bone char filters, glucose syrup made at American Maize Products Company in Roby, Indiana, did not always meet National Canners Association standards. After standing for periods sometime as short as three months, the concentrated syrup would often become turbid.

**Solution:** Investigation revealed a polishing filtration would do much toward removing this difficulty. Although it is not known exactly what causes the increasing turbidity, it is believed possible that near-colloidal organic and inorganic particles act as nuclei for development of the suspensions causing the turbidity. So, a fine filtration which would remove the near-colloidal material can and does prevent the development of turbidity.

When inquiring check CP 7574 on handy form, pgs. 2-3

At American Maize, two Niagara pressure leaf filters are being used, having been installed in June, 1951. One filter serves as a standby for use when the other is ready to be cleaned. Each has stainless steel filter tanks and uses stainless steel filter cloth. Each has 314 sq ft of filter area, and filters 6000 to 7500 gph of syrup which comes from the bone char filters at 160°F. Rotameters measure flow. All pipe is aluminum.

After a filter is cleaned, it is given a 1/8" precoat of Dicalite Special Speedflo (100 lb) mixed with a little Solka-Floc (6 1/2 lb). While the syrup itself is being filtered, filter aid slurry is continually being injected at the rate of 9 1/2 to 10 gph into the feed stream by a Milton Roy controlled volume pump. This slurry consists of a ratio of 50 lb of filter aid to 75 gal of syrup.

Operating experience has revealed that the filter has to be cleaned in about 16 hr if the filter aid slurry is not added continuously. Otherwise cleaning is not required for 48 hr, or in rare instances, 72 hr. It is time to clean a filter when the pressure drop across it has reached 40 psi.

A photoelectric turbidimeter, the Purifil, scans a sample of the filtrate continuously, and shuts off the filtrate feed pump to evaporator if cloudiness develops, putting the filter on automatic recirculation. At the same time, a red light comes on, and a warning buzzer sounds so the operator can take the necessary steps to rectify the difficulty or, if need be, throw the second filter on the line.

**Results:** All glucose syrup being polished with the Niagara filters meets National Canners Association standards. Tests have shown that turbidity does not develop in samples even after they stand for more than a year.

(Pressure leaf filters were made by Niagara Filter Corp., Dept. CP, 3080 Main St., Buffalo 14, N. Y. . . . or for more information check CP 7575 on handy form, pages 2 and 3.)

#### **Tells hints for storing wet batteries**

Wet batteries can be stored for a long time, in good condition, if the following suggestions are observed:

- 1) Remove tops from battery shipping crates when they are received, clear packing material away from tops of cells, and check for cracked jars or spillage.
- 2) Store the crated batteries in a dry room where temperature will remain between 60 and 90°F. Do not stack the crates, but leave them accessible along the floor for inspection and charging.
- 3) Every 30 days, take hydrometer readings of several cells. Charge cells which have a specific gravity of 1.200 or less, until a constant voltage and specific gravity are obtained for four readings taken at hourly intervals.

(Suggested by K. A. Vaughan, Mgr., Field Engineering, Gould-National Batteries, Inc., Dept. CP, Trenton, New Jersey.)

## ***This man has information on over 1000 evaporator installations!***



#### **The Combined Experience of all Swenson Engineers Assures Better Processing at LOWER COST For You!**

Chemical processing firms throughout the world have been helped by Swenson engineers in the development of *over one thousand* evaporator installations! The problems encountered and the solutions effected are known by every one of our engineers—and *you* can have this *combined experience*—just for the asking.

Swenson engineers saved these firms large sums of money and helped greatly to speed the production of uniform, quality products. Previous experience and its

application to each particular problem was an important reason for such accomplishments. Outstanding results have also been attained in many hundreds of filtration, crystallization and drying installations.

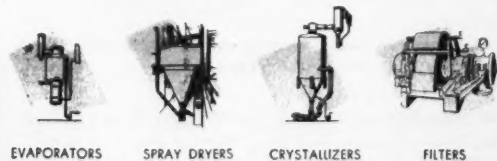
So use Swenson experience! Talk to a Swenson Engineer now . . . *before* you plan so that he can *help* you plan. Let him do much of the "tough" work . . . analysis, layout and design, and recommendation of equipment. You will be assured of an installation that meets *every* specific requirement!

#### **SWENSON EVAPORATOR COMPANY**

15667 Lathrop Avenue Harvey, Illinois

# **SWENSON**

Proved Engineering for the Process Industries  
SINCE 1889



EVAPORATORS

SPRAY DRYERS

CRYSTALLIZERS

FILTERS

When inquiring check CP 7576 on handy form, pgs. 2-3



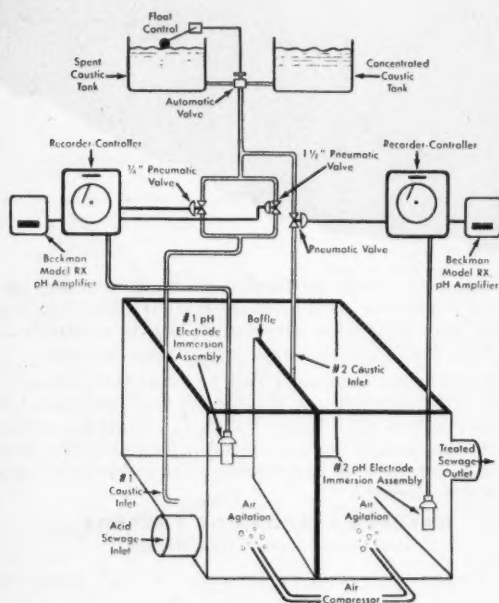
**Simple waste treating method solves home plant problem and those at branches . . .**

controlling effluent at two points eliminates large retention basins

**Problem:** When the Auto-Lite Battery plant was built in suburb-of-Los Angeles, Paramount, county waste disposal ordinances required that effluent pH would not be lower than 6.0. Since some acid was nearly always spilled and washed down the sewer when dilute plate-forming acid was replaced with stronger electrolyte acid, Auto-Lite looked for a way out — or up (to pH 6).

**Solution:** A spent caustic solution was available in the plant. Even so, the fact that acid sewage was highly variable in both volume and acidity seemed to mean that any disposal system would need to be very flexible in capacity and sensitivity to permit adequate waste treatment without using too much caustic.

In the system that was finally installed, acid sewage from the plant flows through a small treating basin of acid resistant brick. A baffle wall divides the basin into two sections. One caustic outlet is placed near the sewage inlet and caustic flow is controlled by a pneumatic controller linked to the

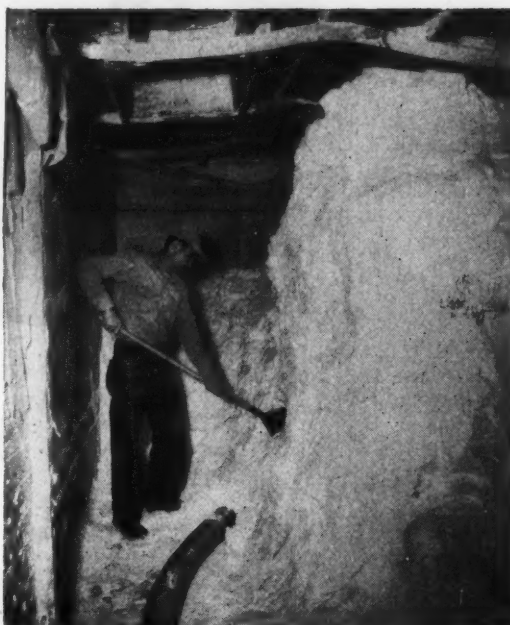


Schematic of "small" treating system that substituted for large retention basins

pH assembly near the baffle. Caustic flow through this line is controlled by a  $\frac{3}{4}$ " and a  $1\frac{1}{2}$ " pneumatic valve. (Low caustic requirements are met with the  $\frac{3}{4}$ " valve; when demand rises flow is through the  $1\frac{1}{2}$ " valve.) This first section is set to control at pH 6.5 — air agitation promoting mixing in the section.

Second section of the tank is very similar, but controller actuates a  $\frac{1}{2}$ -inch pneumatic valve and

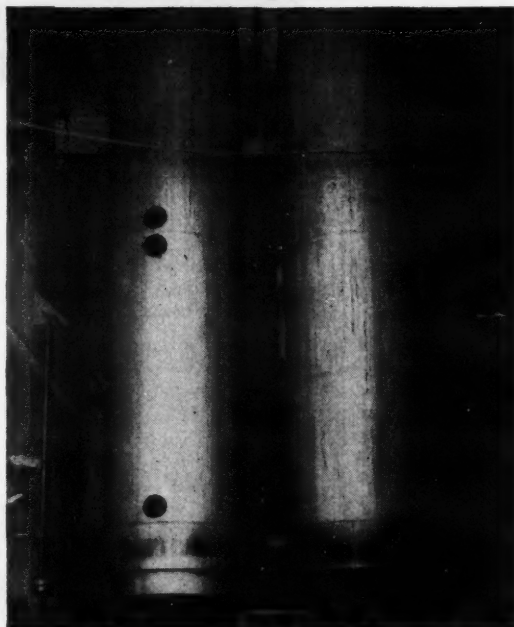
# Stainless Steel withstands cor



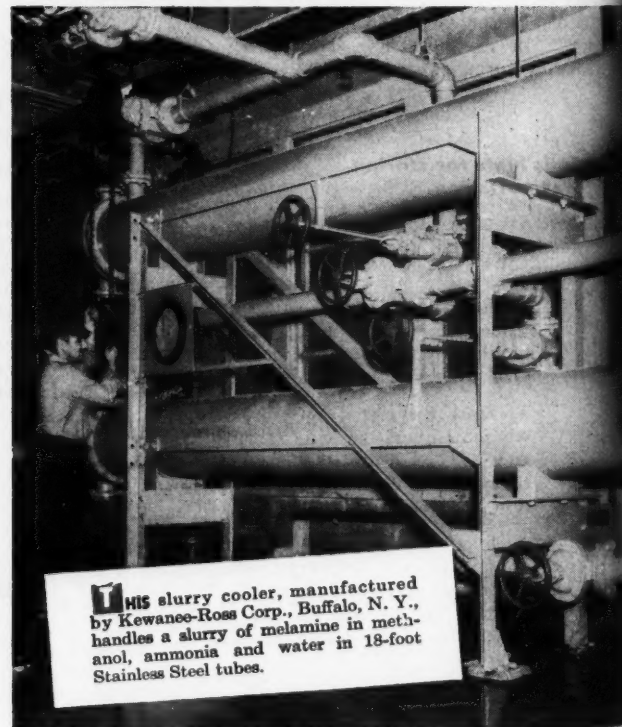
**P**OWDERED dicyandiamide is removed from railroad box cars by means of the Fuller Airveyor. The intake end—made of Stainless Steel flexible tubing—is shown in the foreground.



**T**HE AIRVEYOR with its Stainless Steel flexible tubing is also used to send dicyandiamide from bins on the first floor of the Willow Island, W. Va. plant to processing on an upper level.



**O**NE OF THREE pairs of Stainless-line autoclaves in which polymerization reaction takes place. The 2000-gallon units are five feet in diameter by 28 feet high and were manufactured by A. O. Smith Corporation, Milwaukee, Wis.



**T**HIS slurry cooler, manufactured by Kewanee-Ross Corp., Buffalo, N. Y., handles a slurry of melamine in methanol, ammonia and water in 18-foot Stainless Steel tubes.



# corrosive high-pressure reaction

## at American Cyanamid's big melamine plant

**M**ANUFACTURE of melamine—a basic ingredient in the melamine-formaldehyde resins that find their way into an amazing variety of end products—poses severe equipment problems due to the corrosive nature of the high-pressure reaction involved. But here, as in so many other chemical processing applications, the strength and corrosion resistance of Stainless Steel provide the

answer to these problems.

At the biggest melamine plant in the United States—the Willow Island, W. Va. operation of American Cyanamid Company's Calco Chemical Division—processing takes place almost without exception in Stainless equipment.

The process for melamine manufacture used here is based on the polymerization of dicyandiamide under the pressure of liquid

ammonia with methanol as a secondary solvent.

Powdered dicyandiamide is carried from box cars to concrete storage bins by means of a conveyor using Stainless Steel pipe and flexible tubing. It is mixed with the liquid components in Stainless Steel dissolvers, and then goes to one of six 2000-gallon Stainless-lined autoclaves where the polymerization reaction takes place. High pressure steam in Stainless Steel coils provides the necessary temperatures, and lines, valves, fittings and pumps on each side of the autoclave stage are Stainless, too.

From the polymerization stage, the product passes through Stainless Steel cooling units, quenchers and heat exchangers. After decantation, the residue of 50% melamine and 50% water is further reduced in a battery of four centrifugals, having Stainless Steel baskets and Stainless-clad shells. Final drying takes place in a rotary dryer with Stainless Steel steam tubes and a Stainless-clad shell.

In addition to the high strength and corrosion resistance it provides, Stainless Steel prevents even the slightest metallic contamination of the product which would cause it to fall short of the exacting specifications for resin manufacture.

You'll find these characteristics of Stainless Steel will pay off in your chemical processing operations too. And for finest performance, insist that your fabricator use perfected, service-tested U-S-S Stainless Steel.

**F**INAL DRYING takes place in this rotary dryer made by General American Transportation Company, Chicago, Ill. Stainless Steel tubes carry steam pressure at 65 pounds psi.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO  
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

# U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

# UNITED STATES STEEL

When inquiring check CP 7577 on handy form, pgs. 2-3

USS

control point is set at pH 6.8. This duplicate unit is used solely for the purpose of obtaining better control of effluent pH without the need of resorting to large retention basins. It permits close pH control of a relatively fast flow. Furthermore, should acid content of the incoming sewage rise too rapidly for the neutralizing system in the first section to function completely, second section allows sufficient caustic flow to neutralize final effluent.

Should the spent caustic tank be emptied, a float valve automatically shuts off tank outlet and opens concentrated caustic tank to the controlled system. Normally, concentrated caustic goes to process and is returned, diluted, to the spent caustic tank. Buzzer and light signals immediately warn when spent caustic is depleted.

**Results:** Records made by the two controller-recorders show that this neutralization system has met county waste requirements. This system has been successful in treating variable waste in a small space and has served as a model for many other plants in the immediate area. And, Auto-Lite has installed the system at its plants in Vincennes, Indiana, Owosso, Michigan, and Atlanta, Georgia.

(pH instrumentation for this system was supplied by Beckman Instruments, Inc., Dept. CP, Mission St., South Pasadena, Calif. . . . or for more information check CP 7578 on handy form, pages 2 and 3.)

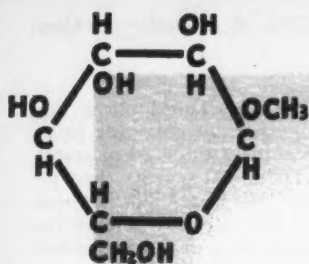
### Mass spectrograph data now assembled on cards . . .

needlesort cards give mol wt, bp, elements present, and peaks

In line with recently announced punched-card system of filing infrared data (CHEMICAL PROCESSING, December 1952, p 61) mass spectrograph data are now available on needlesort cards. While rapid to sort and easy to use, these cards require only a small amount of simple equipment. Cards are substantially patterned after Mass Spectral Data Catalog of the API. Sensitivity on each card is adjusted to a standard level for ease in calculations.

At present, 550 distinct compounds have been placed on file. Card for each of these provides four fields of selection in which one or several needles may be inserted. When needles are raised all cards slotted with required information drop out, all unpunched cards are retained by the needles. Edges are slotted on the basis of 1) molecular weight, 2) boiling point of compound, 3) presence of various elements, and 4) ion mass, with between 3 and 4 peaks punched per spectrum. Further information on the card includes instrument on which spectrum was determined, date, place, source of sample, molecular and semistructural formula, and pertinent instrument settings and test conditions.

(Information about the Mass Spectral Keysort File and methods of using are contained in Bul CEC 1823 published by Consolidated Engineering Corp., Dept. CP, 300 N. Sierra Madre Villa, Pasadena 8, California.)



## Different Type Polyol Available for Esterification and Alcoholysis Reactions

**When esterified with linseed oil fatty acids, resulting oils are rapid bodying and fast drying**

**USES:** Preparation of synthetic drying oils, tall oil esters, and similar applications.

**Esterification.** Two of the four hydroxyl groups of Methyl Glucoside R3 exhibit approximately equal reactivity and tend to be esterified more rapidly than the other two. For example, reaction of equimolar quantities of the polyol and fatty acids under usual conditions yields mostly the diester, with practically half of the compound remaining unreacted.

In reactions between one mole of Methyl Glucoside R3 and 4 moles of fatty acids to prepare tetraesters, it is recommended that the temperature of the charge be held at 190-200°C. (374-392°F) until approximately 50% of the esterification is completed. Temperature may then be raised gradually over a period of one hour to 230-235°C. (446-455°F) and maintained until the desired acid number is reached.

**Alcoholysis.** Partial esters of glycerol and glucoside are readily prepared by reacting the polyol with natural glycerides. Use of this type of esterification reaction provides a convenient method for making drying oils, varnishes and resins.

**Tall Oil Esters.** When preparing tall oil esters, Methyl Glucoside is preferably accompanied by another polyol such as pentaerythritol. It is advisable first to charge an amount of glucoside sufficient to esterify the fatty acids, using the heating cycle recommended above for esterification; the rosin acids are then reacted at a higher temperature with the other polyol.

**Alkyd Resins.** For the preparation of oil-modified alkyd resins, it is possible to use product R3 as a partial replacement for glycerol or pentaerythritol. At high temperatures, the glucoside has a tendency to darken in the presence of phthalic anhydride due to dehydration.

**Derivatives.** Because of its tetrafunctionality and cyclic structure, R3 is a promising intermediate for the preparation of various derivatives of interest as surface active agents, plasticizers, emulsifiers and waxes.

**Features:** Linseed fatty acid tetraesters of R3 possess rapid bodying characteristics and, when cooked into varnishes with phenolic-type resins, dry fast to hard films having excellent adhesion and good alkali and water resistance.

**Description:** Methyl Glucoside R3 is a stable, non-hygroscopic, crystalline compound. It has a cyclic structure possessing four reactive hydroxyl groups.

### PROPERTIES

Appearance	white powder
Odor	none
Melting point, C	165±1
Specific gravity, 30/4° C	1.46
Moisture, %	0.5
Ash, %	0.05
Methyl α-D-glucoside, %	99 min
Solubility, gm/100 gm H <sub>2</sub> O	63
Combining weight/hydroxyl	48.5(calc)*

\*Preferable in practice to use a value of 52

(Methyl Glucoside R3 is available in commercial quantities from Chemical Division, Corn Products Sales Co., Dept. CP, 17 Battery Pl, New York 4, N. Y. . . . or for more information check CP 7579 on handy form, pages 2 and 3.)

## Ethylene-derived wax-like polymer being evaluated as . . .

**coating for paper, lining for metal containers, ingredient in inks, polishes, varnishes, many more**

**USES:** Waxlike polymer derived from ethylene and suggested as a substitute for Carnuba wax in polishes and wax emulsions. . . as a substitute for stearate lubricating aids in processing plastics. . . as a flattening agent for varnishes and other coatings. . . as a water- and chemical-resistant coating for



specialty papers, paper cups and dishes, bread wraps, milk cartons and caps.

As a lining for metal containers. . . as a potting compound for electrical components. . . and as an ingredient of printing inks, leather finishing compounds, latex dispersions, strip coatings, and cosmetics.

**Features:** Resistant to water and chemicals, tasteless, non-toxic, substantially odorless, good electrical properties, and is compatible with most other waxes and wax-like materials.

**Description:** Alcowax is available in two grades:

	ALCOWAX	
	No. 6	No. 7
Melting point, °C	97-102	102-106
Hardness (75°F), mm	0.3-0.5	0.2-0.3
Flash point (200 gm @ 5 sec), °F	470-495	480-500
Molecular weight, ave	2100	2100

Material is only slightly soluble in turpentine, petroleum naphtha, xylene, and toluene at room temperatures. At 180°F it is soluble in xylene, toluene, trichloroethylene, turpentine, and mineral oils. It is practically insoluble in water at all temperatures, and only slightly soluble in methyl acetate, acetone, and alcohol up to the boiling points. Alcowax is miscible in all proportions with solvents boiling above 225°F.

Currently in the development stages is Alcowax "M", a grade readily emulsifiable for introduction into such products as wax polish emulsions, leather finishes, textile sizes, glazing and embossing materials, latex dispersions, water paints, etc.

Another in development stages is Alcowax "G" which has a low cloud point that offers better solubility, particularly in paraffin wax. This material disperses more readily than other grades of Alcowax and is being evaluated for adhesion to metal, coating for electrical condensers, potting compounds, collapsible tubes, etc.

Other modifications of Alcowax are possible and practical — chlorination, for example.

(Alcowax No. 6 and No. 7 are available in limited quantity from the Semet-Solvay Division of Allied Chemical & Dye Corporation, Dept. CP, 40 Rector St., New York 6, N. Y. . . . or for more information check CP 7580 on handy form, pages 2 and 3.)

#### Rubber-to-metal bonding — offer three agents

Three rubber-to-metal bonding agents are offered by this maker — one is for bonding crude rubber, GR-S, Neoprene, butyl and acrylonitrile stocks and is used with secondary cements, and the other two are for vulcanization bonding of butyl compounds to brass plate and primed metals. Designations are Thixon Primer P-2, Thixon IB, and Thixon IB-2, respectively.

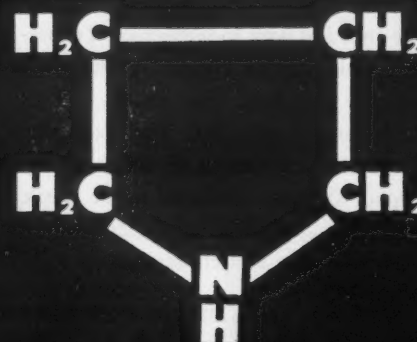
(Products of the Harwick Standard Chemical Company, Dept. CP, 60 S. Seiberling St., Akron 5, Ohio . . . or for more information check CP 7581 on handy form, pages 2 and 3.)

## AVAILABLE IN DEVELOPMENT QUANTITIES FROM DU PONT

# PYRROLIDINE

### PHYSICAL PROPERTIES

Appearance . . . . .	Colorless, mobile liquid
Odor . . . . .	Penetrating, amine-like
Molecular Weight . . . . .	71.12
Freezing Point (Tech. Grade) . . . . .	-63°C.
Boiling Point . . . . .	86-87°C.
Specific Gravity, 20/4 . . . . .	0.8618
Index of Refraction, N <sub>20</sub> /D . . . . .	1.4430
Flash Point (Tag Closed Cup) . . . . .	3°C.
Solubility . . . . .	Miscible with water and most organic solvents
In water forms base with dissociation constant of $1.3 \times 10^{-8}$ .	



This cyclic secondary amine is now being produced synthetically and is potentially available in commercial quantities. A wide variety of unusual compounds can be formed by reactions involving addition, condensation, acylation, and alkylation. Outstanding chemical properties include the following:

**Moderately strong organic base.** Solubilizer for acidic materials.

**Functions as a catalyst and reaction medium** for certain organic reactions.

**Highly reactive, versatile chemical intermediate** which may afford a practical way to make profitable products. For example:

- With carbon disulfide, yields rubber accelerators similar to those obtained from piperidine.
- With alkyl halides, gives N-alkyl pyrrolidines which can be converted to quaternary bases of possible use as sterilizers and surfactants.
- Useful for introducing the pyrrolidyl ring, a physiologically active nucleus found in many natural products such as alkaloids.
- With ethylene oxide, gives an alkanolamine, N-hydroxyethyl pyrrolidine.

**A REQUEST** on your company letterhead will bring technical bulletins and price information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.



When inquiring check CP 7582 on handy form, pgs. 2-3



The chemical with so many uses, Tennessee Liquid Sulphur Dioxide is now available in Cylinders, Ton Drums, Truck Tanks and Tank Cars. The Tennessee Corporation, producers of highest quality Sulphur Dioxide, is located in the textile producing area, assuring closer contact, faster and more efficient service.

**SULPHUR-DIOXIDE**  
HIGHEST  
QUALITY  
**SO<sub>2</sub>**



Let us consult with you on the many uses of Sulphur Dioxide. Perhaps Sulphur Dioxide can solve some of your problems . . . 'phone, wire or write Tennessee Corporation, Grant Building, Atlanta, Georgia.

**TENNESSEE CORPORATION**

619 Grant Building, Atlanta, Georgia



## materials

### Metallic Na Dispersed over High Surface Solids Offers Faster Reaction Rates— Better Over-all Yields

**At certain concentrations, depending on temperature stability of carrier, dispersion may be handled as free flowing solid at temperatures up to boiling point of sodium (883°C)**

**USES:** 1) Purification of hydrocarbon fractions, ethers, gases; 2) preparation of sodium derivatives, e.g., sodium hydride, sodium amide, sodium anilide, sodium acetoacetate; 3) preparation of finely divided metals, e.g., zinc, platinum, nickel, silicon, lead, copper, titanium; 4) preparation of organosodium compounds, e.g., phenylsodium, amylsodium, fluorenylsodium, sodium acetylide.

Available from the manufacturer is literature describing laboratory and pilot plant procedures for utilizing High Surface Sodium on various carriers in the above-named applications.

**Features:** 1) Complete and rapid reaction of sodium; 2) control of reaction rates and temperatures; 3) adaptability to continuous operations; 4) low or high processing temperatures, where needed, with equal ease; 5) little or no sodium wastage; 6) many technically feasible dry-way reactions with sodium; 7) greater safety by eliminating flammable solvents; and 8) better yields.

At various concentrations (ordinary salt may carry 2 to 3% sodium; soda ash, 10% sodium; alumina, 20 to 25% sodium; and activated and colloidal carbons, over 30% sodium). High Surface Sodium may be handled as a free flowing solid at temperatures up to the boiling point of sodium (883°C). This is, of course, dependent on the temperature stability of the carrier. Consequently, this feature allows High Surface Sodium to be handled in fluidized and other moving solids systems.

**Description:** In High Surface Sodium the metal is available in a substantially colloidal form. High surface-to-weight ratios may be achieved by allowing the metallic sodium to spread over high surface solid materials. Many substances may be

employed as carriers, e.g., aluminum oxide, salt, sodium carbonate, carbon, metal powders, ceramics, and often the reaction products themselves.

Term High Surface Sodium is applied to such preparations to distinguish them from massive sodium and sodium dispersions in liquid media.

Reactivity of High Surface Sodium may be demonstrated by its exposure to air. Sodium carbon systems become heated to redness due to the oxidation of both sodium and carbon. Carriers for sodium which are combustible, e.g., sodium methylate and finely divided metals, may ignite. However, sodium spread on non-combustible solids, e.g., activated aluminum, salt, soda ash, and certain anhydrous silicates, becomes heated when exposed to air but does not ignite. In fact, it is reported latter systems usually may be thrown into water with resulting rapid evolution of hydrogen which does not ignite.

Using activated alumina and activated carbon as carriers, at least 10% by weight of sodium must be adsorbed on the former and 25% by weight on the latter before continuous monomolecular films can be formed. As would be expected, the sodium on the internal surfaces of porous solids is not immediately available for a chemical reaction, especially when insoluble reaction products are formed. If the solid is non-porous, however, all sodium is on the external surfaces and is immediately available for reaction.

(Available for assistance in the preparation and use of High Surface Sodium is the Technical Service Dept., of National Distillers Chemical Corp., Ashtabula, Ohio . . . or for more information check CP 7584 on handy form, pages 2 and 3.)

**Replaces up to 50% of  
active detergent without  
impairing formulation quality**

**Sulfonate extender stands up under rigid foam stability, soil removal, soil redeposition testing**

**USES:** Recommended as a component for building a variety of detergents where it functions as a sulfonate extender.

**Features:** Capable of replacing up to 50% of alkyl aryl sulfonates. Maker reports that its use, even in limited quantities, can effect considerable savings. Quality of finished formulations is not impaired by use of the extender.

**Description:** Ocosol #10 is derived from maker's process for refining benzol. Analysis looks something like this —  $C_{9-11}H_{15-17}SO_3Na$ . Typical composition is shown below:

**OCOSOL #10**

Sodium sulfonate, gm/l	200
Inorganic salts (mainly $Na_2SO_4$ & $NaCl$ ), gm/l	400
Non-sulfonated oil	traces
Water, gm/l	600
pH of 5% solution	8
Density of solution	1.28
Weight per gallon, lb	10.7
Pounds sulfonate per gallon	1.7

The following test compares the foam stability of detergent formulations containing Compound Z (a well known active agent) as active agent with formulations where 50% of the active ingredient was replaced by Ocosol #10. It is completely

**FORMULATION**

**A B**

Active detergent	30% Cmpd Z	15% Cmpd Z
Active detergent	—	15% Ocosol #10
Sodium Tripolyphosphate	38%	38%
Sodium sulfate	30%	30%
CMC CT low	2	2

Detergent Formulation	% Used	Water Hardness (50°C)	Foam Height in Centimeters (after indicated time in min)			
			0	1	5	10
A	0.2	2 grain	22.0	20.0	19.5	19.5
B	0.2	2 grain	21.5	19.5	19.0	18.5
A	0.05	2 grain	16.0	15.0	14.5	14.0
B	0.05	2 grain	16.0	15.0	14.5	14.5
A	0.2	15 grain	22.0	20.5	20.0	19.5
B	0.2	15 grain	21.0	19.5	19.0	18.5
A	0.05	15 grain	15.0	13.5	13.5	13.5
B	0.05	15 grain	10.5	10.0	10.0	10.0

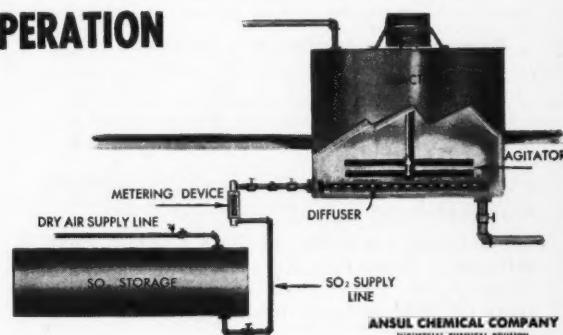
(Continued on next page)

**BETTER  
QUALITY CONTROL  
IMPROVED  
PROCESS EFFICIENCY**

**ACIDIFY..  
OR NEUTRALIZE..  
BLEACH  
PRESERVE  
DEOXIDIZE  
REDUCE  
DECHLORINATE..**

**...IN ONE Continuous OPERATION**

**...WITH AN  
ANSUL  
CONTROLLED SO<sub>2</sub>  
DIFFUSION SYSTEM**



**CONSULT ANSUL'S STAFF** of trained and experienced Chemical Engineers. If you have a problem or process involving acidifying, neutralizing, bleaching, preserving, dechlorinating, reducing, deoxidizing, etc., Ansul's Engineers can be of service. Call on them for assistance, without cost or obligation.

ANSUL SO<sub>2</sub> is a volatile, easy to control, *multi-purpose* acid. It permits the user to . . . 1) combine a number of individual process steps into one simple operation . . . 2) easily remove many product impurities sometimes difficult to eliminate . . . resulting in *improved process efficiency* and *better quality control* of the finished product.

New uses of liquid sulfur dioxide are continually being developed. Its **HIGH PURITY, GREATER ECONOMY, and EASE OF CONTROL** provide a versatile and effective chemical to a great variety of industries.



Write for File No. 402 for more information and if possible, include a description of the application in your plant. Our Technical Staff will help you take full advantage of the benefits outlined above.

**ANSUL**  
*Chemical Company*  
INDUSTRIAL CHEMICALS DIVISION • MARINETTE, WISCONSIN

**MANUFACTURERS OF INDUSTRIAL CHEMICALS, SPECIAL CHEMICALS, REFRIGERANTS, REFRIGERATION PRODUCTS AND DRY CHEMICAL FIRE EXTINGUISHERS. DISTRIBUTORS OF DU PONT "FREON" REFRIGERANTS**

When inquiring check CP 7585 on handy form, pgs. 2-3



## MATERIALS

(Continued from preceding page)

evident that foam stability is approximately the same.

Landerometer tests for soil removal were carried out using Foster D. Snell's artificial soil cotton. An average of 6-10 swatches were used for each experiment. It can be clearly seen that the results

	FORMULATION	
	A	B
Active detergent	30% Cmpd Z	15% Cmpd Z
Active detergent	—	15% Ocosol #10

Detergent Formulation	Brightness Units Gained (MgO = 100) (% detergents)		
	0.5	0.3	0.1
A	9.4	11.6	3.9
B	9.8	8.6	3.8

of soil removal of these mixtures are equally comparable or identical.

Soil redeposition was also measured using clean cloth while 0.025% carbon black was added to the liquid. All washings were carried out at 60°C. Same detergent formulations as in soil removal were used. It can be seen in the soil redeposition

Detergent Formulation	Brightness Units Lost (Mg = 100) (% detergents)		
	0.5	0.3	0.1
A	-22.4	-20.1	-27.3
B	-17.9	-20.5	-30.8

test that mixtures of Ocosol #10 with Compound Z were slightly superior to Compound Z alone.

(Ocosol #10 is a product of Oil & Chemical Products, Inc., Dept. CP, 295 Madison Ave., New York 17, N. Y. . . or for more information check CP 7586 on handy form, pages 2 and 3.)

### Offering G-8 grade of melamine, glass mat laminate

A lower-cost glass mat melamine laminate is now being produced to meet the needs of the U. S. Navy's Bureau of Ships. The new grade, designated as G-8, combines high fire and arc resistance with good mechanical and chemical properties. It is offered at a considerable saving over the cost of the continuous filament glass-base material (NEMA Grade G-5) whose electrical properties it matches.

Material is laminated in thicknesses from 1/16" upward and makes use of a glass fiber mat impregnated with melamine resins. Mechanical properties are less directional than those of a woven base laminate.

In addition to electrical applications, the laminate is expected to be particularly useful where chemical resistance is required — such as in the plating and photographic industries. Following is a list of pertinent engineering data on the new G-8 grade:

## ARMIDS® HELP SOLVE NEW PRODUCT DEVELOPMENT PROBLEMS

In working on many complex surface coating problems, the answer seems to lie somewhere between waxes and plastics. Many of today's plastics are incompatible with and insoluble in the cheaper and more plentiful waxes, such as paraffin and microcrystalline. Due to their unique mutual solvent properties, the Armids—Armour's high molecular weight, wax-like, fatty acid derived aliphatic amides—provide an economical and effective solution to many such problems.

As mutual solvents, the Armids are soluble in a number of modern plastics, but still more important, they permit the plastics to tolerate quantities of petroleum waxes. When these waxes are blended with plastics, the manufacturer can choose a surface that is soft and wax-like or hard, flinty and plastic-like.

The Armids have proved useful in many other fields besides surface coating. Armid HT is a good example. By incorporating small amounts of this Armid into molded rubber formulations, in place of one to two parts of carnauba wax, good appearance and high sheen are added to such quality molded rubber products as sink drain mats, car rugs, footwear, garden hose, etc. Because of the relatively lower cost of Armid HT, considerable savings result from its substitution for carnauba.

Armid HT is also being used in the molding of simulated wood products. Here it acts as an internal mold release agent, resulting in smoother moldings, finer reproduction and greater detail of irregular surfaces, as well as better mold release.

In printing inks, Armid HT and Armowax—a high-melting, hard, brittle wax with very interesting compatibility characteristics—can provide some very desirable results. Armid HT is an extremely effective anti-offset, non-scratch agent, and, when added in small amounts, results in scuff-proof inks which do not have a tendency to rub off. Also, Armid HT can be used as a viscosity control agent to improve the body or consistency of the ink.

Armowax contributes hardness and gloss to dusting resin-powder mixes, according to recent field reports. This powder is dusted over printing that is still tacky. The paper is then subjected to heat, and the result is a hard, glossy ink that has the feel and appearance of embossed print.

Another anti-block agent—Armid C—is used for vinyl polymer type lacquers. When these lacquers are used in paper coating, it is essential that the final coating dry tack-free, or the resulting rolls or stacked sheets will stick together, rendering them unusable. Approximately 5% by weight of Armid C eliminates any possible tackiness. Armid C also is used as an ideal thickening agent for inflammable-type paint and varnish removers.

Armid O can be used as a dip or spray protective coating for such metals as brass and copper alloys as well as parts plated with precious or semi-precious metals. The Armid provides a simple, inexpensive and efficient means of protection from such dangers as fungi growth and tarnish from fumes like hydrogen sulfide.

Armowax has been found superior to the stearates normally used as binders in the molding of powdered sintered metals. This is due to the high melting point of Armowax. It acts as both a binder prior to fusing and also as a die lubricant. Considerable reduction in the wear of the dies results from the use of Armowax.

Its high melting point is also the reason Armowax can be used to improve the wax coating usually required on electrical equipment such as condensers and capacitors. The heat of normal operating temperatures will not soften or melt this wax.

Send the coupon for our new free booklet on these versatile chemicals. Solubilities, compatibilities and other physical data are discussed at greater length as well as other pertinent use-data.

### DUOMEEN® SALTS AS BACTERICIDES AND FUNGICIDES

Salts of Duomeen C and Duomeen 12 have shown considerable promise as bactericidal and fungicidal agents. The Duomeens are strong organic bases, due to their double amine groups, and exhibit greater cationic properties than their corresponding primary amines. Duomeen C is derived from coco fatty acids, and Duomeen 12 from lauric acid. Their salts are soluble or dispersible in water. Send the coupon for free samples with which to begin your testing and evaluation.

### LONGER-LASTING, FASTER-DRYING, NON-YELLOWING ALKYDS WITH NEO-FAT® 140



Nothing looks neater than a newly painted house. But often the paint begins to yellow and age prematurely, and the house loses its clean look. The good effects are lost due to certain defects inherent in the paint itself.

A new answer to this problem in Armour's improved Neo-Fat 140 (formerly 3R)—a fatty acid material produced by a new low-temperature solvent crystallization process. When used to formulate alkyd resins, Neo-Fat 140 gives faster-drying, non-yellowing finishes. Its lower titer means that it can be exposed to temperatures as low as 5°C. without any solidification. High iodine values and low saturated fatty acid content yield more double bonds per gallon of fatty acids, giving better dry and harder alkyd resins.

Faster processing time and brilliant color which carries over into the finished product are other important advantages of Neo-Fat 140. It also offers good flexibility in baking finishes, even at 50°F.

For further information on this improved fatty acid material, send the coupon for Armour's Technical Bulletin A-1, which gives complete data, including formulas.



#### THE DUOMEENS

Complete technical data on the Duomeens—a new group of diamines—is offered in this illustrated booklet. These chemicals have shown properties valuable in many fields, such as asphalt additives, germicides, and anti-corrosion agents. Send the coupon for your free copy.

#### THE CHEMISTRY OF FATTY AMINES

This interesting booklet covers the field of fatty amines in detail, giving end-use data and suggestions as well as physical properties of the amines. Check and mail the coupon today for your copy.

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ARMOUR CHEMICAL DIVISION  
ARMOUR AND COMPANY • 1500 WEST 51ST STREET • CHICAGO 6, ILLINOIS

# COMMERCIALLY PURE MYRISTIC ACID OFFERS MANY PRODUCT DEVELOPMENT POSSIBILITIES

The Armour Chemical Division's patented fractional distillation process has provided many new materials which have led to the development of new and improved products. An outstanding example is Neo-Fat 14—a commercially pure myristic acid.

Myristic acid occurs naturally as the glyceride in various vegetable oils and fats. It is a hard crystalline substance falling between lauric acid and palmitic acid in the saturated fatty acid series. Commercially it is available as Neo-Fat 14 with over 94% pure myristic acid content and only traces of lauric and palmitic acid.

SPECIFICATIONS	MIN.	MAX.
Iodine No. ....	—	1.0
Acid value. ....	243	249
Titer, °C. ....	48	52
Color, Lov. 5 1/4" ..	—	1.0R-10Y
Unsaponifiable. ....	—	0.2%
Moisture. ....	—	0.2%
Odor. ....	—	Characteristic
Appearance. ....	—	Characteristic

## COMPOSITION

Myristic Acid. ....	94.0%
Lauric Acid. ....	3.0%
Palmitic Acid. ....	3.0%

## SOLUBILITY AND COMPATIBILITY

At 60°C, Neo-Fat 14 is soluble in acetone, amyl acetate, benzol, butanol, carbon tetrachloride, dipentene, ethanol 90% and 100%, kerosene, methyl cellosolve, turpentine, V. M. & P. naphtha and xylol.

It is compatible at 60°C with alkyd resins, asphalt, beeswax, carnauba wax, linseed oil, paraffin wax, petroleum pale oil and soybean oil.

## USES

The availability of Armour's high purity myristic acid provides a new raw material for the synthesis of organic compounds. Alcohols, nitriles, amine esters and metallic soaps may be produced easily and find innumerable applications. Many references have been made in recent literature to the use of various Neo-Fat 14 derivatives in detergents, dyes, textiles, wetting agents, lubrication oils and greases and other industrial applications.

The monoglycerol ester of myristic acid is a substitute for coco butter in suppositories and as a super fatting agent for soaps, creams, lotions and similar products.

It may also be used in the preparation of agricultural parasiticides.

Neo-Fat 14 or its metallic soaps have been used in rubber compounding, synthetic resins, paints and grease.

The sodium or potassium soaps of Neo-Fat 14 have remarkable sudsing and wetting action without the skin irritating tendencies found in most free-lathering soaps. This suggests its suitability for cosmetics, shampoos, shaving creams, etc.

Neo-Fat 14 is available for immediate shipment in flake form in both 50-pound multi-wall bags and in aluminum tank cars. Send today for samples.



## ARMOUR'S FRACTIONATED COCONUT OIL FATTY ACIDS NOW EVEN HIGHER IN PURITY

Armour's Neo-Fat coco acids are now available in concentrations of above 92%. This is a degree of purity never before available, and, to mark the change, Armour has re-labeled the Neo-Fats. In the specification chart below, the old number, in parenthesis, follows the new. At the same time that purity standards have been raised, the iodine value has been lowered and the color has been lightened.

Ordinary distilled coconut oil fatty acids are mixtures of nine different fatty acids in percentages varying from 0.5% to 48%. Each of the nine component acids

has its own specific chemical and physical properties which make it valuable for certain uses but unsatisfactory for others. Today, however, you are no longer forced to buy a mixture of nine different fatty acids to get the one you really want.

A new specification chart has just been prepared which includes all pertinent information on these versatile chemicals. Check the coupon for your free copy of this chart. In addition, get the Neo-Fat booklet for end-use information. This new booklet contains much valuable data on the Neo-Fat fatty acids and their use.

	Iodine		Acid Value		Titer, °C		Color, Lovibond 5 1/4"	Caproic	Caprylic	Capric	Lauric	Myristic	Palmitic
	Min.	Max.	Min.	Max.	Min.	Max.							
Neo-Fat 8 (7) (caprylic acid)	—	1.0	387	392	—	16°	2 R-20 Y	3	93	4			
Neo-Fat 10 (9) (capric acid)	—	1.0	323	329	28°	33°	2 R-20 Y		3	92	5		
Neo-Fat 12 (11) (lauric acid)	—	1.0	278	282	41°	44°	1.0 R-10 Y			1	95	4	
Neo-Fat 14 (13) (myristic acid)	—	1.0	243	249	48°	52°	1.0 R-10 Y				3	94	3

Send Samples: ☐ Duomeens C and 12 ☐ Neo-Fat 140 ☐ Neo-Fat 14  
Send Literature: ☐ Armid booklet ☐ Duomeen booklet ☐ Neo-Fat spec. chart  
☐ "The Chemistry of Fatty Amines" ☐ "Fractionated Coco Oil Fatty Acids"

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## MATERIALS

Size: sheets 36 x 36 x 1/16" and upwards	
Flexural strength, flat-wise; 1/2" thick sample:	
Lengthwise direction	24,000 psi
Crosswise direction	20,000 psi
Impact strength, edgewise; 1/2" thick sample:	
Lengthwise direction	6.0 ft-lb/" notch
Crosswise direction	6.0 ft-lb/" notch
Water absorption, 24 hr:	
1/16" thickness	2.70%
1/8" thickness	2.00%
1/2" thickness	1.50%
Dielectric breakdown, 1/8" thick sample:	
Parallel to laminations	65.0 kv
Perpendicular to laminations	200.0 v/mil
Bond strength:	1200 lb
Arc resistance: 185 sec	
Dissipation factor at 1 megacycle:	0.07
1/8" thick D24/25	

(Product of Synthane Corporation, Dept. CP, Oaks, Pa. . . . or for more information check CP 7588 on handy form, pages 2 and 3.)

## Introduce two vinyl-type resin vehicles

films unaffected by vegetable oil and aliphatic hydrocarbon solvents; stable to oxidation

**Uses:** Wallpol 9000 is suitable as a vehicle for making rubber-base, flat wall finishes. It may be formulated with the pigments commonly used in water paint systems including: lithopone, whitening, mica, talc, ultramarine blue, phthalocyanine blue and green, carbon black, and benzidine yellow.

Wallpol 9100 is applicable to the manufacture of primers and sealers. Surfaces such as wallboard, fiber board, plaster, cinderblock, brick, and concrete block can be sealed, it is reported. In general, water-insoluble, non-ionic pigments should be used in 9100 formulations.

**Features:** Films are not affected by vegetable oil and aliphatic hydrocarbon solvents and are reportedly very stable to oxidation and light.

**Description:** Wallpol 9000 is an extremely fine dispersion of a vinyl-type copolymer in water.

## Specifications

Solids content, %	44-46
pH	8.0-9.0
Specific gravity	1.020-1.045
Lb/gal	8.5-8.7

Wallpol 9100 is a polyvinyl acetate water emulsion which can be easily pigmented or plasticized. Its viscosity can be controlled either by dilution with water or various thickening agents. Sodium nitrite and sodium benzoate may be incorporated into various formulations to prevent the corrosion of metal objects.

## Specifications

Solids content, %	54-56
pH	5.8-6.8
Particle size, micron	less than 2
Lb/gal	11

(Manufactured by Reichhold Chemicals, Inc., Dept. CP, 630 Fifth Ave., New York 20, N. Y. . . . or for more information check CP 7589 on handy form, pages 2 and 3.)

When inquiring check CP 7587 on handy form, pgs. 2-3





Dependable Source for Chemical Raw Materials



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### MATERIALS

**Very fine powdered form nylon lends itself to sintering and cold pressing techniques . . .**

uses of powder allows blending with such fillers as copper, lead, and graphite

**Uses:** Nylon powder can be cold pressed and sintered into bearings, gears, cams, valve seats, thrust washers and other industrial products. In addition, the possibility of incorporating special fillers, such as diamond dust, with the nylon suggests uses in lapping and other abrasive tools.

Also possible that the addition of high percentages of electrically conducting powders, such as copper to nylon, may offer certain special advantages in sliding contacts.

**Features:** Sintered nylon articles appear to offer certain advantages over similar injected molded items. Being processed below the melting point, laboratory tests indicate less tendency to internal strain in sintered nylon with consequent greater dimensional stability in service.

Use of a powder without melting enables uniform blending of nylon with a wide range of fillers such as lead, copper, graphite, refractory oxides, and magnetic materials to achieve specialized properties. This eliminates danger of segregation which is present when fillers are added to molten nylon.

**Description:** Nylasint 66 is a very fine powder form of nylon which has been obtained by special chemical means. Physical characteristics of the powder itself appear to be the critical factor in its use in sintering process. Chemical process employed yields particles of the order 1-3 microns; mechanically pulverized nylon having a particle size of the order of 50 microns cannot be used.

Initial data on the physical characteristics are presented below:

Ultimate particle size, micron	1-3
Apparent density, gm/cc	0.27
Pourability (ASTM Designation: D392-38), gm/sec	4.6
Approx screen analysis of aggregates	
+12 mesh	0%
-12 +20	10
-20 +40	25
-40 +70	35
-70 +140	15
-140	15
Bulk factor (fill ratio)	4.1
Density of pressed material before sintering, gm/cc	1.08

Production of sintered nylon objects involves two steps: first, cold pressing to shape in a mold and second, sintering at a very closely controlled temperature just below the melting point in an oxygen-free container.

Mold pressures for initial cold pressing step are in the order of 25 ton/sq in, although pressures up to 50 ton/sq in may be beneficial in the case of large objects or of objects having a relatively complicated shape such as gears. Lower pressure gives a density of 1.08 gm/cc to the green piece; 50 ton pressure gives only a slight increase in specific density but gives some increase in strength.

When inquiring check CP 7590 on handy form, pgs. 2-3



Either of two sintering methods may be used. First is accomplished by immersing the cold-pressed objects in an oil bath and bringing bath up to sintering temperature. Second is employed where it is preferred not to have an oily surface and also where the object contains thin sections. Here, sintering is carried on in a vacuum or in an inert atmosphere such as nitrogen or carbon dioxide.

(Information courtesy of A. D. Little, Inc., 30 Memorial Dr., Cambridge 42, Mass. Nylasint 66 is a product of National Polymer Products, Inc., Dept. CP, Reading, Pa. . . . or for more information check CP 7591 on handy form, pages two and three.)

**Add 10 compounds to organic chem list**

one is reagent for gravimetric determination of Cd with minimum interference from metal ions

Just announced is a group of 10 organic chemicals which will be added to manufacturer's list of more than 3500. One of the 10 is 2-(o-Hydroxyphenyl) benzoxazole, a reagent for the gravimetric determination of cadmium with a minimum of interference by most of the common metallic ions. It is said to give results accurate to better than 0.2 mg in samples containing from 5 to 50 mg of cadmium. Interference from Cu, Ni, and Co may be completely eliminated by a simple separation procedure.

Manufacturer offers, without charge, an abstract of the procedure which was developed for the Atomic Energy Commission.

Complete list of the compounds is as follows:

Benzenephosphonic acid (Pract), mp 164-166°C  
 $C_6H_5PO_3H_2$  . . . mol wt 158.10

Benzenephosphonous acid (Pract), mp 83-86°C  
 $C_6H_5PO_2H_2$  . . . mol wt 142.10

Betaine, mp 305°C dec.

$(CH_3)_3N(OH)CH_2COOH$  . . . mol wt 135.16

tert-Butylamine, bp 44-45°C

$(CH_3)_3CNH_2$  . . . mol wt 73.14

Diethyl p,p'-Azodibenzoate (Pract), mp 143-146°C  
 $C_2H_5OCOC_6H_4N:NC_6H_4COOC_2H_5$  . . . mol wt 326.34

2,2'-Diethyldihexylamine (Pract), bp 160-162°C/21 mm

$[CH_3(CH_2)_5CH(C_2H_5)CH_2]_2NH$  . . . mol wt 241.45

2-Ethylhexylamine (Pract), bp 168-169°C

$CH_3(CH_2)_5CH(C_2H_5)CH_2NH_2$  . . . mol wt 129.24

N-2-Hydroxyethylacetamide (Tech); 75% in water  
 $CH_3CONHCH_2CH_2OH$  . . . mol wt 103.12

2-(o-Hydroxyphenyl) benzoxazole, mp 124-126°C  
 $C_6H_4OC(C_6H_4OH):N$  . . . mol wt 211.21

2-N-Methylanilinoethanol (Pract), bp 155-164°C/22 mm

$C_6H_5N(CH_3)CH_2CH_2OH$  . . . mol wt 151.20

(Available from Distillation Products Industries Division, Eastman Kodak Co., Dept. CP, Rochester 4, N. Y. . . . or for more information check CP 7592 on handy form, pages 2 and 3.)



For over 25 years, Rohm & Haas has used Glycerine in the manufacture of its famous "Amberol F-7." This versatile modified-phenolic resin is used in floor varnishes, quick-drying enamels for home decorating and furniture refinishing, porch and deck paint, and marine finishes.

In the manufacture of Rohm & Haas' "Amberol F-7," a phenolic condensate reacts with Glycerine and rosin to yield a chemically and physically homogeneous, high molecular weight compound. Without this chemical combination with Glycerine and rosin, the phenolic condensate would be insoluble and could not be used in drying oils. Just one more example of the vital part Glycerine plays in the protective coatings industry.

In alkyd resin manufacture, too, America's leading paint manufacturers turn to Glycerine. They prefer its better cooking qualities. They know that Glycerine permits easy control of the manufacturing process to give a product of low acid number, without undue hazard of gelation.

If you'd like detailed information on Glycerine's chemical and physical properties write for your copy of "Why Glycerine for Alkyd Resins and Ester Gums?"—Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

*Nothing takes the place of Glycerine*

When inquiring check CP 7593 on handy form, pgs. 2-3

**Inert, non-flammable gas has high dielectric strength**

**Uses:** Sulfur hexafluoride possesses properties which make it suitable for use in many types of high voltage apparatus. It has found applications in transformers, oil and gas-filled (also dry types); capacitors and condensers — Van de Graaff electrostatic generators and high energy positive-ion accelerators; X-ray apparatus — diagnostic and therapeutic equipment, industrial radiological apparatus, and sterilization equipment; and electronic equipment.

**Features:** High dielectric strength of material permits reduction in size, weight and cost of equipment which uses sulfur hexafluoride in place of oil, other gases, or solid materials.

**Description:** Table I indicates values for various physical properties of sulfur hexafluoride.

TABLE I

Empirical formula	SF <sub>6</sub>
Per cent sulfur (theoretical)	21.95
Per cent fluorine (theoretical)	78.05
Molecular weight (theoretical)	146.06
Melting point, °C	-50.8
Sublimation temperature, °C	-63.8
Vapor density, gm/l, at 21.1°C, 1 atm	6.139
Refractive index, n <sub>D</sub> 20°C/D	1.000783
Polarization, 25°C	
Electronic polarization, P <sub>e</sub>	11.31
Atomic polarization, P <sub>a</sub>	5.20
Solubility of SF <sub>6</sub> in oil cc @ STP/cc of transformer oil at 29.5°C	0.284
Solubility of SF <sub>6</sub> in water cc @ STP/cc of water at 25.5°C	0.0010

Under normal service conditions, material is inert and non-flammable, and produces no harmful effects on personnel if it escapes accidentally from apparatus. It has been described as a physiologically inert gas. However, at very high temperatures in the region of 500-600°C, or in presence of electric arc, SF<sub>6</sub> is slowly decomposed to lower fluorides of sulfur which are hydrolyzable and toxic. Toxic lower fluorides of sulfur formed by decomposition of sulfur hexafluoride may be absorbed on activated alumina.

Since the material is one of the heaviest of known gases, it can be fed directly into most equipment or systems. Due to low operating pressure of SF<sub>6</sub>, the pressure developed when a failure occurs in a gas-filled transformer is only a fraction of that developed in a liquid-filled transformer.

High dielectric strength of sulfur hexafluoride permits operation at higher voltages than are possible with air or nitrogen — increased voltage at same pressures, or the same voltage at reduced pressures. At atmospheric pressure, material has a dielectric strength about twice that of air. Ratio increases as pressure is raised. SF<sub>6</sub> has nearly three times dielectric strength of nitrogen at same pressure in a uniform field. Table II gives a comparison of the relative dielectric strengths of various gases. Although some of the gases indicate higher dielectric strengths than SF<sub>6</sub>, they are not as suitable as the latter because of toxicity, corrosive action, or other physical or chemical properties.

**brief summaries of helpful product news**

**Orthodichlorobenzene Gives Excellent Industrial Performance On Many Jobs**



Orthodichlorobenzene is now available from Monsanto, ready and waiting to perform countless important tasks for all industry.

This versatile compound possesses such a wide range of chemical and physical properties that it has virtually become a standard product in dozens of fields.

It is insecticidal in nature, possesses high solvent properties and low toxicity. This combination has made it an important product for chemical processing and consumer product industries.

Weed killing, for example, is a field where orthodichlorobenzene has proved its effectiveness. Water narcissus and similar underwater vegetation quickly succumb to this chemical.

Heavier than water, the liquid settles to the bottom and envelops vital parts of the water weeds.

Dry cleaning is another use for orthodichlorobenzene. Here the high solvent power and slow evaporation rate of the compound make it an effective "spotting agent."

"Ortho" is also used as a machine shop solvent. It is particularly effective in this application because it has high solvency and a very low order of toxicity.

In addition, Monsanto orthodichlorobenzene can be used as a vehicle for carrying pigments in leather dyeing . . . as a substitute for benzene in paint and varnish removers . . . as a component of shoe polishes. It is also used in metal polishes, wool scouring, gas purification, and in scores of other industrial applications.

**"Spray-on" Balm Makes Tape Adhere Better, Cuts Irritation**

"Spray-on" medicated dressings and balms applied directly from aerosol-type pressure containers are now available.

One example is "Adhesive Balm Spray" made by Larson Laboratories, Erie, Pa. This balm makes adhesive tape and plastic dressings adhere better and come off without irritation. This balm also acts as an antiseptic reducing adhesive dermatitis.

In the formulation of such plastic sprays Monsanto plasticizers are an effective means of insuring exactly the right amount of plasticity desired for most efficient use. Monsanto nontoxic plasticizers have already proved their worth in plastic food wraps developed to protect fruit, vegetables and fish.



If you have a problem of this nature, write us. Monsanto is ready to help you with one of the largest, most complete lines of plasticizers. For information, send in the coupon.

**Para-dichlorobenzene Shows Versatility In Many Applications**

An old friend of the chemical industry, para-dichlorobenzene is more versatile than many chemical producers realize.

It is, of course, best known for its effectiveness against moths and larvae and has established a long record of success against these pests.

Not so well-known, however, are some of the other applications of para-dichlorobenzene. This compound can be used to control peach-tree borers . . . acts as an efficient deodorant . . . is a useful intermediate in the production of dyestuffs . . . aids in mildew control. A novel use is in the manufacture of products, such as abrasive wheels, which require a porous structure with rather uniform interstices.



Regardless of use, you'll find that para-dichlorobenzene made by Monsanto under the name Santochlor\* has a quality and purity that's hard to beat. Santochlor is available in a wide variety of crystal sizes: No. 1, approximately 1/8-inch pellets; No. 0, approximately 1/4-inch pellets; No. 34, approximately rice-size granules; blocking mix, a mixture of sizes under 7-mesh; fines, a mixture of sizes less than 16-mesh.

For more information on how Monsanto Santochlor can help your business, send in the coupon.

**New Silverware Cleaners Use Thiourea to Cut Tarnish**

The family silverware will be looking cleaner and brighter than ever — and with a lot less work, thanks to new-type cleaning compounds now going on the market.

With these cleaners, removing tarnish is virtually a "dip and rinse" proposition. So effective are the new compounds, that several firms are now offering this kind of product.

Key to cleaning effectiveness is thiourea. This chemical reacts with the tarnish (silver sulfide) and forms a soluble complex, almost immediately. To promote thorough contact between solution and silverware, a wetting agent is generally added. When the silverware is removed from solution the tarnish is gone.

To aid manufacturers in this market, Monsanto makes a high grade of thiourea and produces a complete line of wetting agents. For more information on these products mail the coupon today.



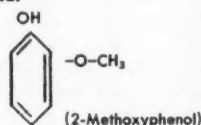
## Quick Facts On Guaiacol (technical)



Guaiacol, technical, is a useful intermediate in the manufacture of flavors and perfumes. It has also been used as an "anti-skinning" agent for paints and as an inhibitor in certain petroleum specialties.

It has the following properties:

### Structural Formula:



**Appearance:** Light-yellow liquid when melted

**Color:** APHA 200, Maximum

**Crystallizing Point:** 26° C., Minimum;  
27° C., Maximum

**Distillation Range:** 95% within 3.0° C.  
First drop, 203.0° C.  
Dry point, 210.0° C.,  
Max.

For a technical data sheet on this product send in the coupon.

## Tests Show Life of Lindane Increased With Aroclors



A marked increase in the effective insecticidal life of lindane results when chlorinated polyphenyls are used in formulation, according to recent information released by the U. S. Department of Agriculture.

In a series of laboratory and preliminary trial studies it was found that specific chlorinated polyphenyls can be used to give either "tacky" or "wet" deposits, as desired.

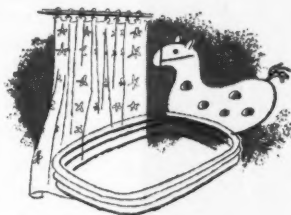
These chlorinated polyphenyls, made by Monsanto under the name Aroclors,\* have good solvent action on lindane and help to improve the appearance of the pesticidal residue. They also function as

relatively nonvolatile, nonoxidizable, nonflammable bonding agents for lindane, imparting strong adhesion to all surfaces and reducing the evaporation of lindane to a marked degree.

High resistance of Aroclors to water and corrosive influences probably accounts for the unusually good weather durability of lindane-Aroclor noted in preliminary work.

Tests with Aroclors were conducted on both roaches and house flies. According to preliminary results, all indications point to a probable increase in the effective life of lindane of ten to twenty times. For more details on this new development, please send in the coupon.

## Low-Cost Plasticizer Extender Aids Manufacturers



If plasticizer costs are cutting too deeply into your profits, you will be interested in a low-cost plasticizer extender developed by Monsanto.

Called HB-40, this compound is available at a price which makes it one of the most economical products of its kind on the market.

HB-40 plasticizer imparts good tensile strength, a dry hand and good moisture-resistant qualities to vinyl plastics.

It can be used as a coplasticizer or as an extender for primary plasticizers in: *Vinyl extrusions* . . . profile, tubing, belting and wire coating, both electrical and nonelectrical.

*Vinyl pastes* . . . organosols and plastisols, for fabric coating, free film, floor covering and dip coatings.

*Vinyl calendering* . . . thin film and sheeting both supported and nonsupported. HB-40 is also effective when used in various polystyrene resins, ethylcellulose and asphaltic compounds.

• • • • •  
• **MONSANTO CHEMICAL COMPANY**  
• 1702 South Second Street, St. Louis 4, Missouri  
•

• Please send information on:

- ☐ Orthodichlorobenzene ☐ Santochlor ☐ Nontoxic plasticizers  
• ☐ Thiourea ☐ Guaiacol ☐ Aroclors ☐ HB-40  
• ☐ Ammonium and Potassium Phosphates ☐ Santomerse No. 1

• Name.....Title.....

• Company.....

• Street.....

• City.....Zone.....State.....

## Concentrated Soluble Fertilizers a Fast-Growing New Market for Profits



There's a new, fast-growing market now opening up in the plant-nutrient field across the country . . . concentrated soluble fertilizers.

Formulators are finding that sales of these products increase quickly because of the advantages soluble fertilizers have for the average home gardener.

These fertilizers can be easily applied by hose or sprinkler. They are safe to use . . . don't cause burning. They are also light, have minimum of odor, and —best of all—are quickly taken up by the plant.

Key ingredients in many of these fertilizers are the ammonium and potassium phosphates supplied by Monsanto. Monopotassium phosphate, diammonium phosphate, monoammonium phosphate and phosphoric acid — all are available from this one source. For details on prices and shipments send in the coupon.

## Improved Santomerse No. 1 Offers Greater Surface Activity

Improved wetting, greater sudsing, better color . . . those are the advantages soap formulators and detergent producers are now obtaining with the new and improved Santomerse\* No. 1.

This product has been made more effective as a result of careful study and product evaluation by research and development groups. It is a typical example of the steady progress and advance in product development that is necessary to enable Monsanto to consistently supply industry with better products.



\*Reg. U. S.  
Pat. Off.

	Estawax 3	Estawax 25
Color (NPA), max	3	3
Melting point, °F (ASTM E28-42T)	210-220	210-220
Penetration (100/5/77), max	2	2
Viscosity, cps @ 300°F	450-550	200-300

As noted, properties of each grade are similar, however, Estawax 25 forms firmer gels when used with solvents such as mineral spirits and turpentine. For this reason, it is recommended when a very firm paste is required. Estawax 25 is said to have greater compatibility with ethyl cellulose.

(Samples and recommended formulations are available upon request to Petrolite Corporation, Ltd., Dept. CP, 5515 Telegraph Road, Los Angeles 22, Calif. . . . or for more information check CP 7596 on handy form, pages 2 and 3.)

## MATERIALS

TABLE II

Material	Relative Dielectric Strength	Boiling Point °C
SF <sub>6</sub>	2.3-2.5	-63.8
CCl <sub>4</sub>	6.3	76
SeF <sub>6</sub>	4.5	-49.2
CCl <sub>3</sub> F	3-4.4	24.1
CCl <sub>3</sub> H	4.3	61
C <sub>2</sub> H <sub>5</sub> I	3.0	72
SOF <sub>2</sub>	2.5	-30
SO <sub>2</sub>	1.9-2.3	-10
C <sub>2</sub> H <sub>5</sub> Br	1.5	38
CF <sub>4</sub>	1.1	-126
N <sub>2</sub>	1.0	-195.8
CO <sub>2</sub>	0.9	-78

When sulfur hexafluoride is used in place of oil, the K-fold increase in dielectric strength of gas surrounding an electrode system permits a K-fold reduction of all its physical dimensions without changing its voltage-insulating ability. Similarly, apparatus in which spacing between various components is about the same as in oil-filled apparatus, but containing sulfur hexafluoride under pressure, can be made lighter than oil-filled apparatus.

(Sulfur hexafluoride is a product of General Chemical Division, Allied Chemical & Dye Corp., Dept. CP, 40 Rector St., New York 6, N. Y. . . . or for more information check CP 7595 on handy form, pages 2 and 3.)

## Suggested as complete or partial substitute for Carnauba wax

**Uses:** Can be used as a partial or complete replacement for Carnauba in wax formulations — phonograph records, paste and liquid polishes, and similar products.

**Features:** Compares very favorably with the gel formation and film hardness of Carnauba, with the added advantages of uniformity, toughness, flexibility, and lower cost.

**Description:** Estawax is a synthetic wax. Compared to Carnauba, it is tougher, more flexible, higher melting, and equal in hardness at elevated temperatures. Uniformity can be controlled within very close limits. Properties of two available grades are tabulated below:

When inquiring check CP 7594 on handy form, pgs. 2-3



# DOWICIDE PRESERVATIVES GIVE LONG LIFE TO NEW LATEX PAINTS

most new products can be improved  
by adding a preservative.



The Dow Chemical Company  
Department DP-31  
Midland, Michigan

Please send me detailed information on the uses of  
DOWICIDE PRESERVATIVES.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Adding a DOWICIDE® PRESERVATIVE to latex paint prevents damaging bacteria growth during shelf-life—prevents mildew formation on painted surfaces. This is just one of many instances in which the addition of a DOWICIDE PRESERVATIVE to a new product insured its sales success. The new family of latex paints owes much of its acceptance to the positive microbial control action of DOWICIDE PRESERVATIVES.

Dow manufactures fourteen different DOWICIDE PRESERVATIVES. They are being used in a variety of industries to stop waste resulting from destructive bacteria and mold growth. Whether you are developing a new product or changing an old one, DOWICIDE PRESERVATIVES may well have a place in your plans. Be certain to send today for detailed information on DOWICIDE PRESERVATIVES. THE DOW CHEMICAL COMPANY, Midland Michigan.

you can depend on DOW CHEMICALS



When inquiring check 7597 on handy form, pgs. 2-3

## Glass fabric stretches while yarns remain stable . . .

has up to 70% elongation and equal strength  
can be obtained in all directions

**Uses:** Primarily as a base for reinforced plastics in the low pressure molding of industrial products with compound curves.

**Features:** Stretches while the yarns remain stable. When laminated with polyester, it can be molded into practically any shape or size, with little heat and low pressure. Resulting material can withstand exposure to temperatures up to 500°F; is waterproof, airtight; doesn't require painting, and is impervious to most acids and most dilute alkalis.

**Description:** Form-Fab glass fabric is available in thicknesses of 0.009 and 0.012" in 250-yd long rolls, and 0.018" thickness which comes in 125-yd long rolls. Tests performed on the 0.012" fabric show an average weight of 11.79 oz/sq yd. Strength tests show an average breaking load of 567 lb/" of width in the warp and 349 lb/" of width in the filling.

Tests on the 0.009" and 0.018" fabrics have not been completed as yet.

(Introduced by Hess, Goldsmith & Co., Dept. CP, 1400 Broadway, New York, N. Y. . . or for more information check CP 7598 on handy form, pages 2 and 3.)

## Inhibitors retard gum formation when added to gasoline

Most gasolines deteriorate when stored in presence of air, and the rate of deterioration depends upon composition of the gasoline, temperature, and the intimacy of its contact with air. Deterioration is usually accompanied by formation of gum, darkening in color, decomposition of tetraethyl lead, or decrease in knock rating.

Deterioration of gasolines, with the resultant formation of gums, may be retarded by addition of inhibitors. By reacting with various peroxides believed to be formed in decomposition of gasoline and which form gums by causing catalytic decomposition, inhibitors are able to retard deterioration.

Bulletin discusses various gum inhibitors and a copper deactivator, with special regard to various factors to be considered in the selection of proper inhibitors for various types of gasolines. Information is given on causes of gum formation and the uses and handling of inhibitors.

"Inhibiting Motor Fuels with the Tenamenes" is issued by Tennessee Eastman Co., Dept. CP, Kingsport, Tenn. When inquiring specify CP 7599 on handy form, pages 2 and 3.

For more information on product advertised  
at right, specify CP 7600 . . . see information  
request blank between pages 2-3.



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*Controlled Quality*

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offer dependability  
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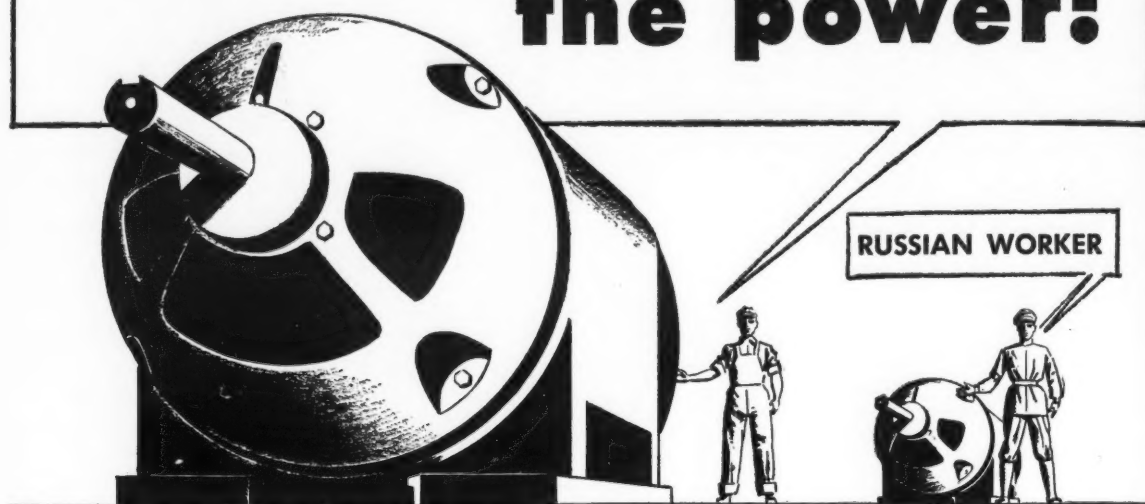
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# AMERICAN WORKERS HAVE **7 times** **the power!**



## How does America do it?

Why does the American worker have the help of about 7 times as many kilowatt-hours of electric power as is available to the Russian worker?

How can we Americans produce over 40% of the world's goods and bring so much more of everything to everybody with less than 6% of the world's population? Why is the American output per-man-hour still growing faster and faster?

The answers cannot be laughed off nor are they hard to find. In the words of Ralph J. Cordiner, president of the General Electric Company: "The greatest impetus for forward movement still comes when individuals are free to plan and carry out their own ideas without government coercion or unnecessary regulation."

Including estimated expenditures in 1952, private industry in the last seven years will have invested over 150 billion dollars in new plant and equipment. This contrasts with Federal Government investment of not much more than 12 billion for similar purposes in the same period. Moreover most such Government expenses during the last three years have been allocated

to military and atomic projects.

Back of all this progress in private industry is the unique American system of competition—our kind of competition that continually stimulates Americans to make things better and to sell them better—and at lower prices.

In America we do not just compete for public office; we also compete in technology, competency of management, individual initiative and distribution—the latter including selling and advertising in all their varied forms.

Our kind of competition promotes the growth of more and more businesses and industries—and this means more jobs and expanding prosperity from which we all benefit.

"Planned economies" and other fancy theories are not for us. The American competitive system has given us the highest standard of living in the world. Let's all work to preserve it.

*This report on PROGRESS-FOR-PEOPLE is published by this magazine in cooperation with National Business Publications, Inc., as a public service. This material, including illustrations, may be used, with or without credit, in plant city advertisements, employee publications, house organs, speeches, or in any other manner.*

**THE COMPETITIVE SYSTEM DELIVERS THE MOST TO THE GREATEST NUMBER OF PEOPLE**



## MATERIALS

### Plastic lining for concrete and steel tanks . . .

available in 3/32, 1/8 and 3/16" thicknesses

**Uses:** Lining steel or concrete tanks which are subjected to corrosive salts, alkalis, and most acids. It is satisfactory for use with 20% chromic acid and 10% nitric acid at 150°F.

It may be used at higher temperatures and with stronger solutions of nitric and chromic acid when the structure is protected by brick. It is not recommended for organic compounds containing chlorine or nitro groups, aromatic amino compounds, solvents or thinners, glacial acetic acid, lacquers, acetic anhydride, aliphatic or aromatic ketones, gasoline or other solvents.

**Description:** Atlstavon 20 is a plasticized polyvinyl chloride sheet available in thicknesses of 3/32, 1/8 and 3/16" in 48" widths. It has a tensile strength of at least 7000 psi, impact strength of at least 0.4 ft/lb/in of notch (Izod), modulus of elasticity of at least 400,000 psi, and Rockwell hardness of 60-80M. Water absorption is less than 0.1%.

(Atlstavon 20 is manufactured by The Atlas Mineral Products Co., Dept. CP, Mertztown, Pa. . . . or for more information check CP 7601, pages 2 and 3.)

### Tabulates specifications of colloidal carbon

Six tables list specifications for rubber blacks, carbon blacks, base dispersions (dispersions of carbon in organic media), aqueous dispersions, iron oxide pigments, and bone blacks. In addition, suggestions are given for possible applications of some of the materials.

Bulletin describing specifications of various colloidal carbons is issued by Binney & Smith Co., Dept. CP, 41 E. 42nd St., New York 17, N. Y. When inquiring specify CP 7602 on handy form, pages 2 and 3.

For more information on product at right, specify CP 7603 . . . see information request blank between pages 2-3.

## MOVING TOWARD NEW SOLUTIONS\*

Working out new and varied solutions to old problems

is a fundamental part of Niagara's service to industry

### NIALK® Carbonate of Potash

With its increased solubility and superior lubricating properties, NIALK Carbonate of Potash is widely used as a dye extender in printing pastes for the finest of printed fabrics.

Backed by constant research, produced with the strictest attention to quality control, this NIALK product—like every NIALK product—meets industry's most exacting specifications.

## NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York



NIALK LIQUID CHLORINE NIALK CAUSTIC POTASH

NIALK CARBONATE OF POTASH NIALK PARADICHLOROBENZENE

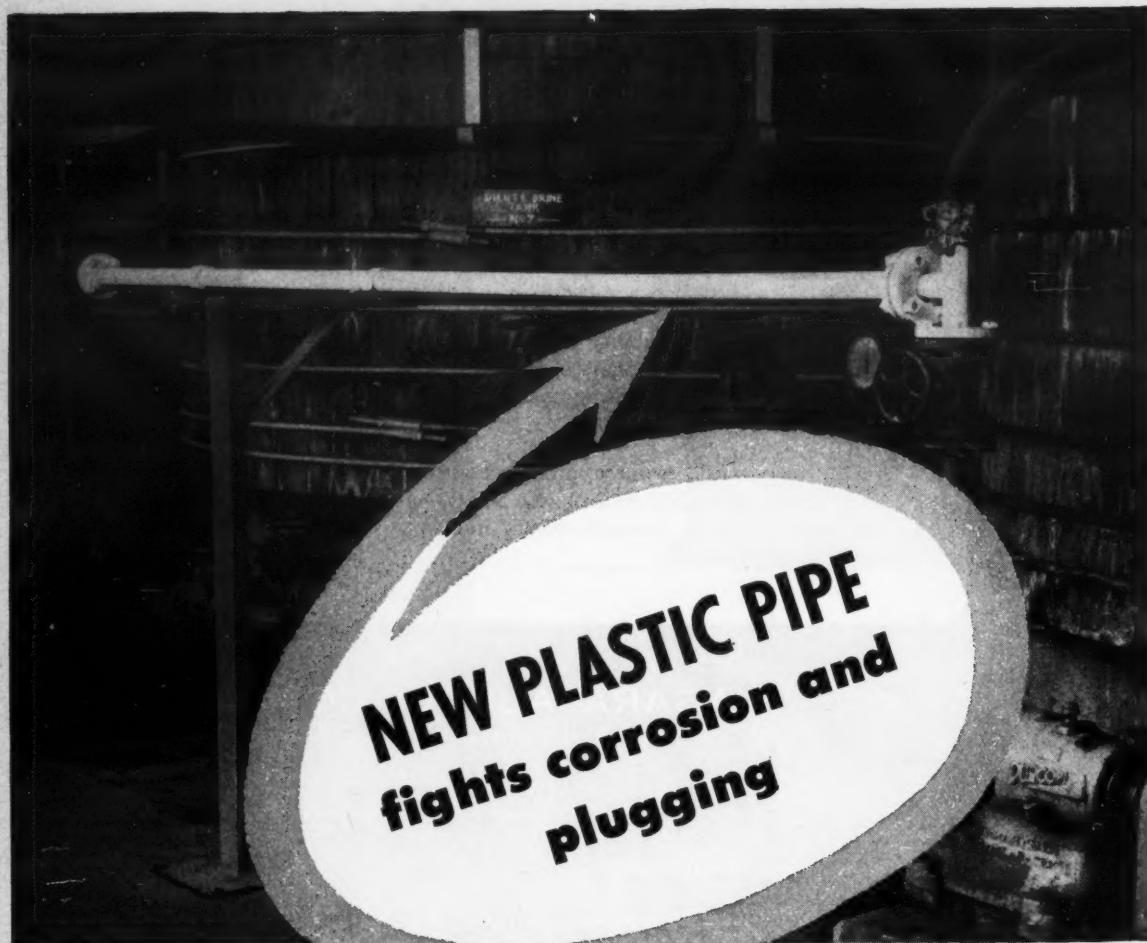
NIALK CAUSTIC SODA NIALK TRICHLORETHYLENE

NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)



Another new development using

# B. F. Goodrich Chemical raw materials



**NEW PLASTIC PIPE**  
fights corrosion and  
plugging

*B. F. Goodrich Chemical Co. does not make this plastic pipe. We supply the Geon resin only.*

**T**HIS rigid polyvinyl plastic pipe is doing a beautiful job of carrying highly corrosive, acidified dilute brine, where other types of hose or pipe caused difficult problems.

For example, when rubber hose was used, it plugged up because the rubber particles carried in the brine tended to stick to the side of the hose. This meant dismantling and unplugging the hose about every three months.

With metal pipe, the rubber particles would stick to the welding. And another type of corrosion-resistant pipe was hard to install and broke easily.

This rigid plastic pipe, made with Geon polyvinyl chloride resin, takes

care of all those problems and more! Pipe like this can be made rigid or flexible, useful for underground or overhead piping to carry liquids or gases.

It resists soil acids or alkalis and electrolysis. No protective coating or wrapping is needed. It can be made light enough for a small boy to lift easily. Polyvinyl plastic pipe is four to six times lighter than steel pipe of equal length, diameter and wall thickness.

To the economies in use and maintenance, add the savings in racking, stringing, handling, freight and shipping costs with plastic pipe like this!

It's another example of how Geon materials help improve or develop

products, and lower costs. Perhaps they can help you. For technical information, write Dept. GF-1, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON organic colors

When inquiring check CP 7604 on handy form, pgs. 2-3

## MATERIALS

**Developed to produce clarity and transparency in vinyl compounds . . .**

three stabilizers — organic-tin, cadmium-barium combination, and organic cadmium

**Uses:** Impart heat and light stability to vinyl resins. Stabilizer 89X is generally used in combination with Stabilizer BC-12 which gives lubricating value and adds to the heat stability.

**Description:** Stabilizer OM-10 is an organic-tin salt with the following properties:

Color, G-H	5
Specific gravity @20°C	1.02
Viscosity @25°C, cp	20

It is soluble in ketones, esters, higher alcohols, plasticizers, Plastoflex VS, and similar ester type plasticizers. It was developed particularly to give an organo-tin stabilizer which would have less volatility and odor at high processing temperatures.

Stabilizer 89X is a liquid organic cadmium stabilizer, while BC-12 is a coprecipitated cadmium-barium fatty acid salt. Latter is a free-flowing granular powder with a controlled ratio of the two metals. In most cases BC-12 furnishes enough lubrication so that no further additives are necessary.

(Manufactured by Advance Solvents & Chemical Corp., Dept. CP, 245 Fifth Ave., New York 16, N. Y. . . . or for more information check CP 7605 on handy form, pages 2 and 3.)

**Latex paints freeze without damage . . .**

freeze-thaw stability, plus good handling and brushing properties from latex

**Uses:** For latex emulsion paint formulations.

**Features:** Freeze-thaw stability is demonstrated in a wide variety of latex paint formulations. Paints are said to have good brushing and handling properties. A good wet lap can be achieved with a minimum of foaming and pin-holing. Films have been evaluated by scrub test and show excellent wash resistance.

**Description:** Pliolite Latex 160FR retains the properties of its predecessor, Pliolite Latex 160 — scrub resistance, stability, film toughness, film hardness, and aging characteristics. Physical properties are outlined below:

Solids content, %	47 ± 2
Weight/gallon (wet), lb	8.4
Weight/gallon (dry), lb	3.8-4.1
Specific gravity (dried solids)	1.01
pH	9.0-11.0
Surface tension, dynes/cm	<50
Viscosity, cps	<100
Percent coagulum, % d wt (ave)	<.01

(Pliolite Latex 160FR is available for evaluation from Chemical Division of The Goodyear Tire and Rubber Company, Inc., Dept. CP, 1144 East Market Street, Akron 16, Ohio . . . or for more information check CP 7606 on handy form, pages 2 and 3.)

**Offer hydrated silica  
of fine ultimate  
particle size . . .**

demonstrates almost 100%  
gain in tear resistance

**Uses:** Reinforcing pigment for  
non-black rubber goods.

**Features:** In comparison tests  
with manufacturer's companion  
product, new product demon-  
strated substantial tensile in-  
creases and almost 100% gain in  
tear resistance.

**Description:** Hi-Sil "C" is a  
companion product to regular  
grade of manufacturer's Hi-Sil.  
It is a hydrated silica of extreme-  
ly fine ultimate particle size.

**Typical property information:**

Bulk density, lb/cu ft	6.8
Sp gr	1.95
Ave particle size, $\mu$	0.022
Wet screen test, % 325 mesh	0.1
Color	white
Free moisture, %	4.7
pH	7-8
Refractive index	1.46
Ignition loss, %	14.0
SiO <sub>2</sub> , %	86.5
CaO, %	1.0
NaCl, %	2.0
Fe <sub>2</sub> O <sub>3</sub> , %	0.3
Al <sub>2</sub> O <sub>3</sub> , %	3.5
Surface area, m <sup>2</sup> /gm	140-60

(Manufactured by Columbia-  
Southern Chemical Corp., Subsidi-  
ary of Pittsburgh Plate Glass  
Co., Dept. CP, Fifth Ave. at  
Bellefield, Pittsburgh 13, Pa. . .  
or for more information check  
CP 7607 on handy form, pages  
2 and 3.)

**Descriptions, features  
of protective clothing**

Protection against abrasion, oils,  
greases, acids, alkalis, salt water  
and other chemicals is offered  
by protective and safety clothing  
described in 8-page bulletin. In-  
cluded in discussion is clothing  
fabricated of Neoprene latex as  
well as oiled, rubberized and  
calendered rubber clothing.

"Protective and Safety Clothing"  
is issued by The H. M. Sawyer  
& Son Co., Dept. CP, Cam-  
bridge, Mass. When inquiring  
specify CP 7608 on handy form,  
pages 2 and 3.

For more information on prod-  
uct at right, specify CP 7609  
. . . see information request  
blank between pages 2-3.

# WITCO STEARATES

manufactured under strictest  
quality control. Every Witco  
Stearate is job-designed—with  
the specific properties needed  
for your application:

**WITCO Aluminum Stearates . . .** For grades of  
medium to extremely high gel, with excellent prop-  
erties, economical too. Also grades for paints, inks, var-  
nishes, lacquers, waterproofing and metal processing.

**WITCO Barium Stearate . . .** Ideal dry lubricant for  
high-temperature applications in rubber, plastic,  
metal processing.

**WITCO Cadmium Stearate . . .** Light and heat sta-  
bilizer for highly transparent formulations of PVC  
plastics.

**WITCO Calcium Stearates . . .** For low viscosity in  
paints, inks, varnishes, lacquers. Also as internal and  
mold lubricant. Non-toxic stabilizer for polyvinyl  
film used in food packaging.

**WITCO Copper Stearate . . .** Mild fungicide for coat-  
ings, waxes, finishes.

**WITCO Iron Stearate . . .** For specialty coatings,  
primers, metal treatments.

**WITCO Magnesium Stearates . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Nickel Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Potassium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Sodium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Zinc Stearates . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Zirconium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Strontium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Barium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Calcium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Magnesium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO Aluminum Stearate . . .** For specialty  
coatings, primers, metal treatments.

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**WITCO Barium Stearate . . .** For specialty  
coatings, primers, metal treatments.

**WITCO CHEMICAL COMPANY**

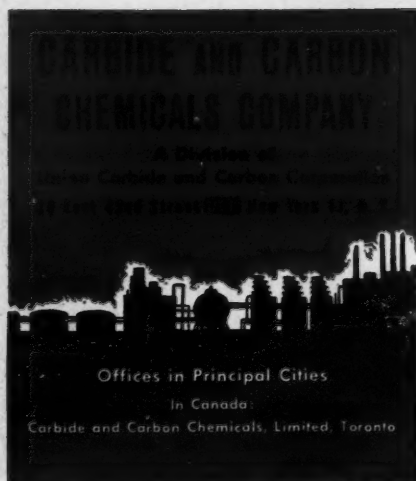
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NEW YORK OFFICE: 170 NASSAU ST., NEW YORK, N.Y. 10038



# YOU'LL BE A JUMP AHEAD...

by selecting from Carbide's wide range of solvents—more than 75 esters, ketones, alcohols, and glycol ethers.



An outstanding example to meet your solvent needs is the versatile glycol-ether, Butyl "Cellosolve." It is an excellent solvent for alkyd, phenolic, and nitrocellulose resins, industrial cleaners, insecticides, and herbicides. Butyl "Cellosolve" is also a mutual solvent in soluble metal-cutting and textile oils.

But no matter what your solvent needs may be, it's always a wise move to check with Carbide and Carbon, the solvent center. For further information on solvents, or any of Carbide's chemicals, write to our sales office nearest you. Ask for your copy of the new booklet, "Physical Properties of Synthetic Organic Chemicals." (F-6136)

When inquiring check CP 7610 on handy form, pgs. 2-3

## MATERIALS

### 10% greater attraction for water than glycerine

**Uses:** Humectant suggested for the following applications: 1) in the knit goods trade as an additive in weighting to eliminate dusting and powdering of the weighter and to soften the hand. 2) As a flame resistant treatment to flame-proof paper and other materials. 3) In the textile printing trade as an ingredient of the print paste for vat dyes in order to retain moisture in the ager during processing.

4) In warp sizing to prevent the sized warps from becoming too dry. 5) In starch glues to make the paste smoother and prevent separation of water from the paste caused by contraction of the starch. 6) For general service as a hygroscopic and plasticizing agent.

**Features:** Manufacturer states that humectant shows approximately 10% greater attraction for water than glycerine.

**Description:** Humectant is designated as Hartexsol C and is available as a water-white viscous liquid.

(Product of The Hart Products Corp., Dept. CP, 1440 Broadway, New York, N. Y. . . . or for more information check CP 7611 on handy form, pages 2 and 3.)

### Add four compounds with varied application

one has stabilizing effect on organic substances subject to deterioration

**Methylhydrazine** (mol wt 46.07), a highly hygroscopic liquid with a bp of 87°C, is a strong reducing agent. It is useful as a reagent for the preparation of crystalline hydrazones for identification of organic compounds; in the preparation of various substituted hydrazines, semicarbazides as well as in the synthesis of pyrazole and indazole derivatives.

**Pyrrole- $\alpha$ -aldehyde** (mol wt 95.1) has a mp of 45°C and consists of odorless prisms of high optical refractivity. Gives a bisulfite addition compound but does not respond to the Angeli-Rimini aldehyde test. It may be condensed with methyl ketones and is useful in the synthesis of substituted pyrrole derivatives.

**Quinoline-8-carboxylic acid** (mol wt 173.2) consists of colorless needles with a mp of 187°C. It is readily soluble in water, alcohol, acids and alkali. It may be oxidized to quinolinic acid, forms a number of characteristic metallic salts and is useful in analytical chemistry. Has a stabilizing effect on organic materials such as vegetable fats and oils, textile fibers, photographic developers, and paraffins.

**Sulfamide** (mol wt 96.2) consists of colorless rhombic crystals with a mp of about 93°C; readily soluble in water but is decomposed by acids or alkali. It may be condensed with formaldehyde to form resin-like substances and with primary

amines to form alkyl-sulfamides. Possesses a number of manufacturing uses, including the preparation of foaming agents, films and adhesives, insecticides, fungicides, and fire-retardants.

(Available from Bios Laboratories, Inc., Dept. CP, 17 West 60th St., New York 22, N. Y. . . or for more information check CP 7612 on handy form, pages 2 and 3.)

#### Offer 3 aids for rayon, silk processing

Three water soluble, medium viscosity oils are being offered to the textile processing field. Rayon Crepe Oil #114 is a blend of sulfonated oils with free coconut oil and sulfonated mineral oil which produces a stable emulsion for crepe soaking of rayon skeins or cakes. Either still tub or machine soaking may be employed.

Dextrol Silk Oil #42 is composed of a mixture of sulfated fatty oils with added soluble mineral oil (pH 8.5). It is utilized for softening silk gum of China and Jap silk preparatory to winding and throwing, and effective on both filament warp silk and thrown crepe silk.

Dextrol Silk Oil #84 is a mixture of sulfated oils with added soluble mineral oil for softening Duopioni silk preparatory to winding and throwing.

(Products of the Dexter Chemical Corporation, Textile Chemical Division, 819 Edgewater Rd., New York 59, New York . . . or for more information check CP 7613 on handy Reader Service slip, pages 2 and 3.)

#### Low sulfate and chloride content characterize manufacturer's p-toluenesulfonic acid . . .

a monohydrate, high purity product has guaranteed assay of 99% as hydrate

**Uses:** Major use as a catalyst in esterifications; also shows promise as a catalyst in acetylations, alkylations, dehydrations, condensations, isomerizations and rearrangements.

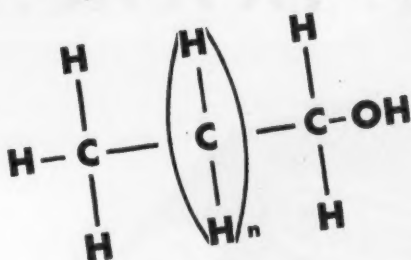
**Features:** Grade offered is high purity one — assay of 99% as the hydrate; possesses little or no odor and is extremely low in sulfates, chlorides and ash.

**Description:** Manufacturer's p-toluenesulfonic acid has following physical properties:

Melting point, °C	
tetrahydrate	92
monohydrate	105
anhydrous	106-7
Solubility	
water	v.s.
alcohol, ether	s.

(Announced by Smith-New York Co., Inc., Dept. CP, Freeport, L. I., New York . . . or for more information check CP 7614 on handy form, pages two and three.)

## IDEA-CHEMICALS FROM DU PONT



### "LOROL" \* FATTY ALCOHOLS

Can be esterified with acids in the presence of a catalyst.

Can be oxidized to give the corresponding aldehydes. Further oxidation yields the acids.

Can be dehydrated over an aluminum oxide catalyst to yield corresponding olefins.

Are non-corrosive.

## Here are versatile straight-chain alcohols you should investigate

Du Pont "Lorol" fatty alcohols have wide applications as chemical intermediates and emulsifying agents. Available in six grades, "Lorol" fatty alcohols feature: controlled hydroxyl numbers ranging from 260 to 440; controlled maximum iodine, acid and ester numbers; and a high degree of uniformity as insured by careful redistillation during the manufacturing process.

Among other important uses in industry, "Lorol" fatty alcohols have become valuable helps in the manufacture of pharmaceutical and cosmetic products and find useful application in the petroleum, rubber, textile and leather industries.

Why not investigate the use of "Lorol" fatty alcohols in your business? We'll be glad to send you more information on these versatile, high-quality alcohols—specifications, properties, suggested uses. Just clip the coupon below, or write on your letterhead today. E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

\*REG. U. S. PAT. OFF.

**GRADES AND AVAILABILITY:** Six grades of "Lorol" fatty alcohols are available, shipped in 8,000-gallon tank cars or 55-gallon drums—except as stated otherwise:

"Lorol" 5 and 7, mixtures made up principally of lauryl and myristyl alcohols.

"Lorol" 20, normal octanol.

"Lorol" 22, normal decanol.

("Lorol" 28 is available in U. S. P. Grade: 50-lb. fiber drums; and Industrial Grade: 50-lb. bags.)

"Lorol" 24, normal cetyl alcohol (shipped in 140-lb. fiber drums—minimum carload lot: 30,000 lb.).

"Lorol" 28, normal stearyl alcohol.

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E. I. du Pont de Nemours & Co. (Inc.)  
Polychemicals Department 152-P, Wilmington 98, Del.

Please send me more information on "Lorol" fatty alcohols—specifications, chemical and physical properties, suggested uses, bibliography, etc. I am interested in evaluating "Lorol" alcohols for the following applications:

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

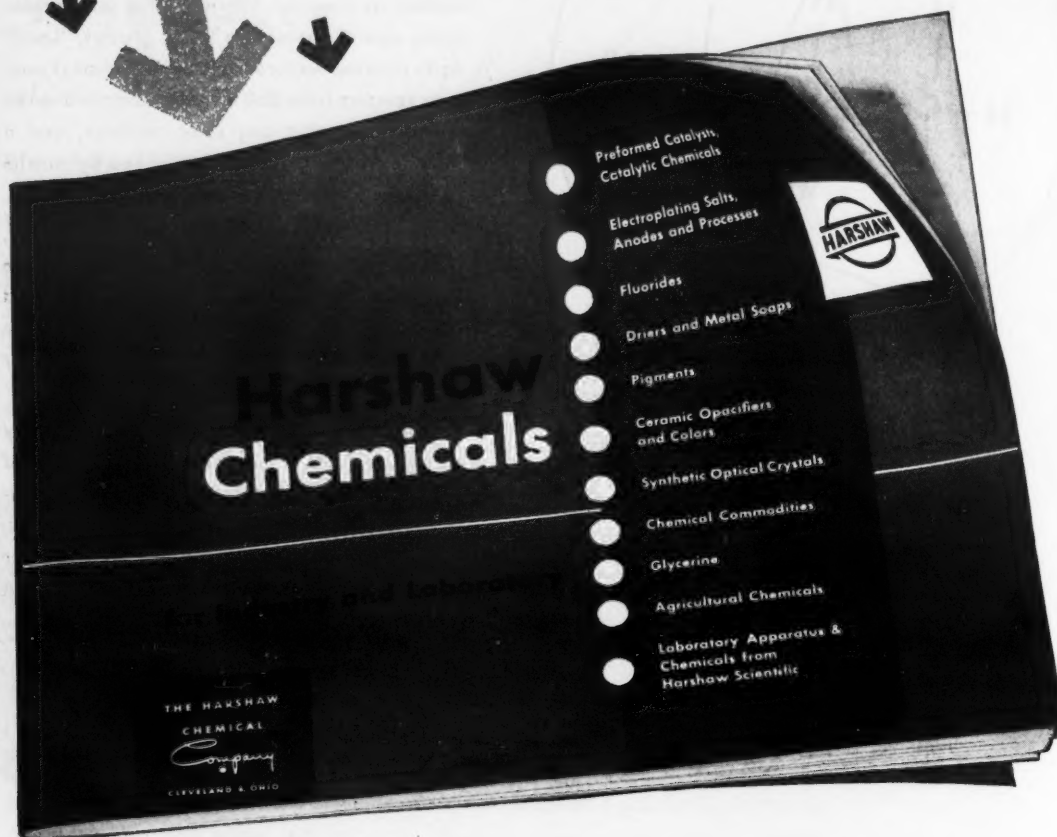
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

When inquiring check CP 7615 on handy form, pgs. 2-3

# WRITE FOR THIS FREE

## 16 PAGE BOOK...



This 16 page illustrated booklet describes the major activities of The Harshaw Chemical Co. It lists manufactured items and offers booklets which furnish more specific information about these Harshaw products.

### THE HARSHAW CHEMICAL COMPANY

1945 East 97th Street, Cleveland 6, Ohio

Send me a copy of your booklet

"Harshaw Chemicals for Industry and Laboratory"

MY NAME (Please Print)

CO. NAME

STREET ADDRESS

CITY ZONE STATE

When inquiring check CP 7616 on handy form, pgs. 2-3



### MATERIALS

#### Extruding tubing from Teflon

Tubing of extruded Teflon is now being produced in ten different sizes — OD's ranging from  $\frac{3}{8}$  to  $1\frac{7}{8}$ ", and ID's from  $\frac{1}{4}$  to  $1\frac{5}{16}$ ". Tubing is said to have extremely good concentricity and almost perfect roundness and straightness. Control of inside and outside diameters can be held within 0.005" tolerance.

Utility of the tubing can be gleaned from Teflon's outstanding chemical properties — resists highly corrosive materials. Specific applications for which the tubing are being used include: pipe or hose for highly corrosive materials; used as stock from which to slice packing rings, spacers, etc; and used in producing high frequency electronic insulators instead of starting with solid rod.

(Teflon tubing is a product of the Ethylene Chemical Corporation, Dept. CP, 245 Broad St., Summit, N. J. . . . or for more information check CP 7617 on handy form, pages 2 and 3.)

#### Ag fungicide to meet needs of 1953 growing season

A 250% increase in the production of Crag Fruit Fungicide 341 for the 1953 growing season has been announced. During 1952, this spray material was in short supply because of a rapid increase in demand. Crag 341 is used primarily for the control of apple scab and cherry leaf spot.

A glyoxalidine fungicide, Crag 341 also has the unique property of preventing red mites from multiplying to epidemic populations.

(Product of Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd Street, New York 17, N. Y. . . . or for more information check CP 7618 on handy form, pages 2 and 3.)

#### Chemicals, brake fluids described in bulletins

Three technical bulletins discuss two chemicals and hydraulic brake fluids. "Chloroacetaldehyde" is a 15-page bulletin which gives general information including properties, toxicological and handling data, general reactions and suggested uses for chloroacetaldehyde. This reactive compound undergoes practically all of the typical aldehydic reactions and shows particular promise in fields of pharmaceutical preparations and fumigation.

"Hydraulic Brake Fluids" is a 9-page bulletin which deals with components of hydraulic brake fluids and requirements for each of the ingredients. It also discusses use of polyglycols and glycol ethers in manufacture of the brake fluids.

A 15-page bulletin, "Styrene Oxide," gives general information including properties, reactions, possible uses, and toxicological data of



## MATERIALS

styrene oxide, which is a highly reactive organic intermediate most useful in aralkyl type intermediates field. Material is useful in preparation of resins, surface active agents, plasticizers, pharmaceutical intermediates, and other chemical processing intermediates.

Bulletins are issued by The Dow Chemical Co., Midland, Mich. When inquiring be sure to specify 7619 on handy Reader Service slip between pages 2 and 3.

### Nonionic-anionic blend emulsifies dieldrin, DDT, heptachlor . . .

small amounts required for emulsification; works in all types natural water

**Uses:** Toxaphene/DDT, heptachlor, dieldrin, DDT, DDT/BHC and lindane emulsifiable systems. Also suggested for toxaphene, chlordane, 2,4,5-T, 2,4-D and 2,4,5-T/2,4-D systems.

**Features:** Low cost per pound, small amounts required for emulsification, and effective in all types of natural water.

**Description:** Cooper Emulsifier ATX-75 is a dark brown, nonionic/anionic blend with a specific gravity between 1.04 and 1.06. It weighs 8.6-8.8 pounds per gallon, has a pH of 5 to 7 and is soluble in iso-octane,  $CCl_4$ , xylol, and toxicant/solvent combinations; dispersible in kerosene as well as water.

(Available from William Cooper & Nephews Inc., 1909-25 Clifton Ave., Chicago 14, Ill. . . or for more information check CP 7620 on handy form, pages 2 and 3.)

### Develop primer to stop peeling of PVC finishes from steel . . .

contains vehicle which gives it high polarity and excellent edge coverage

**Uses:** Primer for polyvinyl chloride finishes to be used on steel surfaces. Stated to adhere almost perfectly to rusty steel or sandblasted steel surfaces; does not adhere to smooth, shiny steel unless latter is thoroughly aged. Also suggested for rubber base, Neoprene and other corrosion resistant coatings.

**Features:** Contains type vehicle which gives it high polarity, excellent edge coverage and an ability to reduce rust to basic iron. After aging it possesses good corrosion resistance to most acids.

**Description:** Rustbond Primer is stated to cost no more than standard primers, covers about the same area per gallon, and is applied by brush like any other paint. It is unplasticized and will not burn in an ordinary flame.

(Manufactured by the Carboline Co., Dept. CP, 7603 Forsyth Blvd., St. Louis 5, Mo. . . or for more information check CP 7621 on handy form, pages 2 and 3.)

AT YOUR END OF THE  
COAL CHEMICAL PIPELINE . . .



### NEW Magic Bullets for Murdering Microbes

Coal chemicals are the steadfast allies of the medical scientist in his uphill conquest of disease. Pyridine, for example, is vital in the manufacture of sulfa drugs. And gamma-picoline, another valuable Pittsburgh coal chemical, is the source of isonicotinic acid hydrazide, the drug which has shown bright promise in the experimental treatment of tuberculosis in recent months.

Because we control every step in the production of these coal chemicals—from coal to finished chemicals—we're able to provide the medical and pharmaceutical fields with products of exceptional high quality and purity. This same assurance of quality extends through the closely integrated production of our entire Neville Island plant.

Whether you need coal chemicals, agricultural chemicals, dyestuffs, or the products of any of our other divisions, you'll find Pittsburgh Coke & Chemical a reliable source . . . because we're basic.

Alkyl methyl pyridinium chloride  
Benzene meta, para-Cresol ortho-Cresol  
Naphthalene Phenol Phthalic Anhydride  
alpha-Picoline beta, gamma-Picoline  
Isonicotinic Acid  
Pyridine Sodium Cyanide  
Toluene Xylene Xylenol



**PITTSBURGH**  
COKE & CHEMICAL CO.

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

When inquiring check CP 7622 on handy form, pgs. 2-3

## MATERIALS

### Synthetic resin is basic raw material . . .

for rubber, pulp and paper, wood products fields

A synthetic resin — essentially a hard hydrocarbon — produced by the polymerization of unsaturates derived from deep cracking of petroleum is being offered as a basic raw material for the following fields: chemical; textile and floor covering; pulp and paper; lumber and wood products; petroleum; rubber; leather; plastic; stone, clay and glass; metal and metal working; electrical equipment; and others.

Piccopale is available in three forms — solid, flaked, and in solution. All are clear and thermoplastic. They are reported to possess good chemical resistance, ready solubility, and compatibility with a wide range of products. Material is said to fill the gap between petrolatum and petroleum rubbers in the following series: *petroleum solvents, oils, waxes, petrolatums, Piccopale, and petroleum based elastomers and rubbers.*

Four standard grades are: Piccopale 100 — flakes or solid with melting point (Ball & Ring) of 100°C; Piccopale 85 — solid with melting point of 85°C; Piccopale 70 — solid with melting point of 70°C; and Piccopale 100 Solution — composed of 60% solids in mineral spirits. Custom-made solutions and blends are also available.

The resin is compatible with a wide range of products, including waxes, rubbers, polyethylene, coumarone-indene resins, phenolics, rosins and esterified rosins, many alkyls and vinyls, and most common drying oils.

(Product of the Pennsylvania Industrial Chemical Corporation, Dept. CP, Clairton, Pa. . . . or for more information check CP 7623 on handy form, pages 2 and 3.)

### Exhibits solvency powers for large variety of common mat'ls . . .

dimethylformamide also demonstrates selective solvent properties for many gases

Uses: Strong solvent for nitrocellulose, cellulose acetate, cellulose triacetate, and vinylite resins. Aliphatic hydrocarbons, normally very slightly soluble in dimethylformamide at room temperature, are miscible at elevated temperatures. It is one of the most efficient solvents for acetylene — dissolving 33-37 volumes of acetylene per volume of solvent at normal temperature and pressure. Solubility of other common gases in one volume of the solvent at 1 atmosphere are:

Cl <sub>2</sub>	385
H <sub>2</sub> S	50
SO <sub>2</sub>	300
HCl	775
BF <sub>3</sub>	385

It is reported to be a solvent of polyacrylonitrile, or copolymers containing over 70% acrylonitrile. Compound will also dissolve other relatively insoluble polymers and copolymers such as vinylidene chloride and polyvinylformal. Other mis-



(Scanning time: 1 min. 45 sec.)

### VICTOR ACIDS . . . VERSATILE CHEMICALS MAY OFFER POSSIBILITIES TO YOU

To the chemist, phosphoric acid, formic acid, and oxalic acid are as common as the test tube, yet their unique properties inspire new uses constantly. Present uses of these versatile Victor acids are almost endless, as are the many different advantages they provide. Consider once again their properties described on the following page. In them you may see an opportunity of application and the solution to an important product or process problem. Victor's technical and research staff will willingly help you explore that possibility. Experimental samples of these Victor acids are available. Mail the coupon.

### NEW VICTOR ACIDS MAY BE CHEMICALS YOU SEEK

The new Victor Acids described on the next page are offered for your evaluation. The unusual properties of Victor Carbamide Phosphoric Acid, Borophosphoric Acid, and Formic Acid, Anhydrous, indicate usefulness in many applications. These new Victor chemicals may be what you've been looking for and could be the key to a worthwhile development for your company. Mail the coupon for experimental samples.

### VICTOR . . . THE DEPENDABLE SOURCE OF SUPPLY

Users of phosphates, phosphorus compounds, formates and oxalates gain a big advantage by choosing Victor as a source of supply. Victor is

known as . . . the dependable name in chemicals. This is especially true of Victor service.

If the regular delivery of chemicals is essential to your production, consider this: Victor is the only producer in the industry with 3 elemental phosphorus plants and 4 processing plants to serve you. Victor's multiple sources of power, labor, raw materials, and transportation insure dependability of supply for you. Then, too, Victor's plants are strategically located from coast to coast to serve you better and offer even greater security of supply.

Remember Victor's multiple plant facilities and nationwide service when selecting your source of supply. Remember Victor . . . the dependable name in chemicals.

### BRING YOUR PRODUCT PROBLEM TO VICTOR

Victor has specialized in the development and manufacture of phosphates and phosphorus compounds for 55 years. You can benefit from this experience and the knowledge gained. If you have a product or process problem, bring it to Victor. Our technical and research staff will be pleased to work with you.

### NEW FOLDER ON VICTOR RESEARCH CHEMICALS AVAILABLE

A new folder which describes 45 Victor research chemicals is available. Technical information and suggested uses are given. Mail the coupon now for your copy.

#### VICTOR CHEMICAL WORKS

141 West Jackson Boulevard, Chicago 4, Illinois

Please send without cost or obligation:

- |  |  |
|--|--|
| <input type="checkbox"/> Sample of Phosphoric Acid           | <input type="checkbox"/> Sample of Formic Acid           |
| <input type="checkbox"/> Sample of Carbamide Phosphoric Acid | <input type="checkbox"/> Sample of Formic Acid Anhydrous |
| <input type="checkbox"/> Sample of Borophosphoric Acid       | <input type="checkbox"/> Sample of Oxalic Acid           |
| <input type="checkbox"/> Copy of New Research Folder         |  |

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

(Fill in and attach to company letterhead)

# IMPORTANT PROPERTIES OF VICTOR ACIDS

## PHOSPHORIC ACID

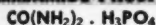


Phosphoric acid is a clear, colorless, sparkling liquid. All grades meet the requirements of the Federal and State Pure Food Laws.

Concentrations: 75%  
80%  
85% N.F.  
115% (Poly)

**USES:** Manufacture of yeast, sugar, soft drinks, imitation jellies, gelatin, pharmaceuticals; rustproofing, engraving, railroad car cleaning, refining oil and gasoline, preserving silage; weighting silk, dyeing textiles; chemical polishing and electro-polishing metals, bright-dip baths for aluminum; manufacture of phosphates, dental cements, glue, ceramics, glass, metal treating compounds, explosives, fertilizers.

## CARBAMIDE PHOSPHORIC ACID



White rhombic crystals. Mol. Wt. 158. Very soluble in water and alcohol. In solution it is essentially carbamide and phosphoric acid, and is therefore a convenient solid form of phosphoric acid.

**USES:** An efficient catalyst for acid setting resins. It is recommended where a solid form of phosphoric acid is desired, and is useful in flameproofing compositions, in cleaning compounds, and as a general acidulant.

## OROPHOSPHORIC ACID



Melting point, decomposes. Density, 1.873. A white, water soluble, crystalline, nonhygroscopic solid. Ignition loss, 18.5%. pH of 1% solution, 2.0. Total acidity when dissolved in water is equal to 79%, calculated as orthophosphoric acid. This also includes acidity due to the presence of the boric acid.

**USES:** This compound is recommended where a solid non-hygroscopic acid is desired. Not recommended for food applications. Availability: Semi-commercial quantities.

## FORMIC ACID



Formic acid is a fuming, colorless, corrosive liquid that evaporates completely on exposure to the air. It has a characteristic pungent, penetrating odor, and is milder than muriatic or sulphuric acid; considerably more active than acetic acid. pH of 1% solution approximately 2.15. Concentrations: 85% and 90%.

**USES:** Tanning, acidifying dye-baths, souring in laundries, plating baths; manufacturing formates, fumigants, insecticides, pharmaceuticals, antibiotics, refrigerants, solvents for perfumes, lacquer; wire stripping compounds.

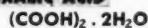
## FORMIC ACID—ANHYDROUS



Mol. Wt. 46. A clear, water-white, volatile, hygroscopic liquid. Freezing point 8.4°C. Boiling point 100.75°C. at 760 mm. Specific gravity 20/4°C., 1.2196. Refractive Index  $n_D^{20}$  1.3714.

**USES:** Special purpose solvent, catalyst in organic synthesis. Availability: Research samples and experimental lots by arrangement. Caution—Harmful to skin and other tissues.

## OXALIC ACID



Oxalic acid is a brilliant, transparent, colorless, crystalline material.

Typical quality: Assay (min.) 99.8%  $(\text{COOH})_2 \cdot 2\text{H}_2\text{O}$   
 $\text{SO}_3$  (max.) 0.05%

Solubility: 12.5 parts in 100 parts of water at 25°C. Oxalic acid, anhydrous, is also available on special order. This material is a chalky white solid, soluble in water.

Typical analysis:  $(\text{COOH})_2$  99.25%

**USES:** Radiator cleaning compounds, leather processing, bleaching of straw, wood, cotton linters; laundry sour for discharging bleach and removing iron stains; washing coal; removing rust stains from marble; manufacture of metal polishes, blueprints, dyes, bluing; purifying compound and precipitating agent; analytical reagent; reclaiming colored candles; ink and rust remover; purifying rosin; cleaning railroad cars.

**VICTOR**  
Dependable name in  
*Chemicals*  
for 55 Years

## VICTOR CHEMICAL WORKS

141 West Jackson Boulevard, Chicago 4, Illinois

A. R. Maas Chemical Co., Division  
4570 Ardine Street, South Gate, Calif.

When inquiring check CP 7624 on handy form, pgs. 2-3

cellaneous gums and resins soluble in the material are coumarone-indene, phenol-formaldehyde, wood rosin, shellac, ester gum, manila copal and, finally, lignin.

**Description:** Dimethylformamide has the following properties:

Appearance	colorless liquid
Boiling point @760 mm, °C	153
Freezing point, °C	61
Flash point (Tag open cup), °C	67
Molecular weight	73.09
Refractive index $n_D$ @25°C	1.4269
Specific gravity, 25°/4°C	0.9445
Pounds per gallon @68°F	7.92

It can be hydrolyzed to dimethylamine and formic acid by heating with excess concentrated acid or alkali. Aqueous solutions of dimethylformamide are stable to hydrolysis up to 100°C.

It will react with Grignard reagents to produce aldehydes, secondary alcohols or amines depending on the mols of reagent used. Can be distilled at atmospheric pressure without decomposition. It is relatively stable to light, and because of its moderate chemical reactivity, it is essentially non-corrosive to ordinary metals at room temperature.

(Available from Commercial Solvents Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . or for more information check CP 7625 on handy form, pages 2 and 3.)

## Thermoplastic suitable for large moldings . . .

urea-formaldehyde in all colors gives good surface appearance to molded pieces

A new housing type urea-formaldehyde molding material has been developed in response to a long-standing need in the plastics industry for a colored thermosetting material suitable for large moldings.

Plaskon Urea, reports maker, has proved itself superior to previous urea molding compounds produced for this type application, particularly for radio cabinets and clock cases. It is readily moldable, and in molded form has good surface appearance and lustre. The new material is non-electrostatic, non-combustible, has high dielectric strength, and is scratch resistant. Properties are tabulated below for molded material:

Compression molding, Temperature, °F	275-325
Pressure, psi	2000-8000
Mold shrinkage, %	.006-.014
Dielectric strength, Short time (1/8"), v/mil	300-400
Step by step (1/8"), v/mil	250-300
Specific gravity	1.47-1.52
Water absorption (24 hr), %	0.5-0.7
Tensile strength, psi	5000-10,000
Hardness, Rockwell	M116-M120
Resistance to oils, greases	excellent
Resistance to weak acids, alkalis	poor

(Product of Plaskon Division of Libbey-Owens-Ford Glass Company, Dept CP, 2829 Glendale Ave., Toledo 6, Ohio . . . or for more information check CP 7626 on handy form, pages 2 and 3.)

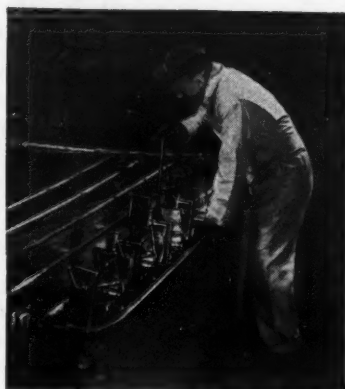


# dynel's Chemical Resistance

## Increases Wear-Life, Cuts Costs of Industrial Clothing



DYNEL industrial clothing has outworn that of other fibers in the same service by as much as 10 to 1. DYNEL'S inherent chemical resistance... good strength—wet or dry... high abrasion resistance assure extremely long laundry life.



In jackets, trousers, lab aprons and sox, DYNEL offers increased use economy. They may be cleaned or decontaminated in acids without harm.

### ACTION OF SOME CHEMICALS ON DYNEL (24 hour immersion)

Acids	Conc.	Temp.	Appearance	Loss in Strength
Sulfuric	70%	50° C	No effect	Warp 8.8% Filling 3.4%
Hydrochloric	38%	50° C	No effect	None
Hydrofluoric	50%	Room	No effect	3.4%
Nitric	40%	50° C	No effect	None
Bases				
Sodium Hydroxide	50%	50° C	No effect	4.5%
Ammonium Hydroxide	28%	Room	No effect	6.6%
Oxidizing Agents				
Hydrogen Peroxide	30%	Room	Slight bleaching	None
Sodium Hypochlorite	Commercial	50° C	No effect	None
Solvents				
Ethyl Alcohol	100%	50° C	No effect	None
Perchloroethylene	100%	50° C	No effect	None
Deodorized Kerosene	100%	50° C	No effect	None
Toluene	100%	50° C	Slight bleaching	3.4%

### Performance Will Tell It's DYNEL

- Unaffected by most chemicals
- Will not support combustion
- Washable—won't shrink or stretch
- Strong—wet or dry

Textile Fibers Dept.  
Carbide and Carbon Chemicals Company  
A Division of Union Carbide and Carbon Corp. UCC  
30 East 42nd Street, New York 17, New York

Please send me:  
☐ The DYNEL Chemical Resistance Folder  
☐ A list of manufacturers of DYNEL industrial clothing

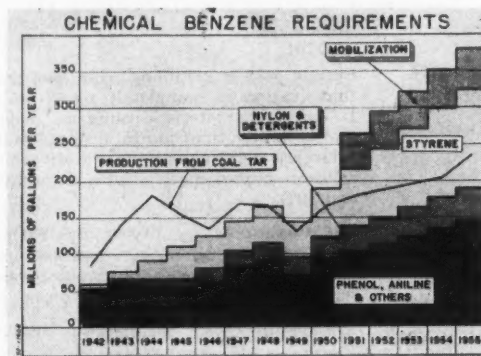
Name.....  
 Company.....  
 Address.....  
 City.....Zone.....State.....

When inquiring check CP 7627 on handy form, pgs. 2-3

## MATERIALS

### Petroleum chemicals — source of raw material for chemical field

Before the last war the US produced about 140 million gallons of benzene per year, but more than 2/3 of it went into motor fuel. In the war years there was a rising demand for phenol to make resins, and a growing requirement for ethylene benzene (styrene) for synthetic rubber. At the same time the octane requirements for aviation gas demanded large quantities of isopropyl benzene (cumene). These demands were met by refining more and more motor grade benzene and by importing and refining crude benzene from Europe.



But in the post war period, even though the heavy demands for benzene in motor fuel were lessened, we faced an even greater demand with the increased production of nylon, DDT, and phenol. The detergent industry came into full flower with increasing emphasis on the alkyl aryl type, requiring a benzene alkylate as its base. Polystyrene took the spotlight as a low-priced resin for sources of uses. As a result, motor benzene almost disappeared and chemical grade benzene doubled in price, rising from 15c to 30c a gallon.

As early as 1947 it was apparent that the demand for benzene was outrunning the domestic supply, and that supplementary sources must be developed. Studies of future consumption made by the Esso Standard Oil Company showed this clearly, and they had practical evidence that outsiders shared their views. Outsiders knew of the work that had been done in hydroforming to produce toluene and xylene and they assumed that benzene could be similarly made. These outsiders were right from a scientific standpoint but not from an economic one. In other words, Esso could not produce benzene to compete in a 17c market, or even come close to it. This same situation was common to other oil companies, as evidenced by public rumors.

Esso, however, did not relax its research efforts because it was felt that price considerations would ultimately take care of themselves if the demand continued to grow. This demand is shown graphically on the first of the accompanying charts. It shows how benzene has been consumed in its major chemical uses, and how these uses are expected to grow over the next few years. Note the heavy single line showing the production of chemical grade ben-

## FOAM'S A THIEF...



# KILL IT

## with Dow Corning ANTIFOAM A

The most versatile and efficient of defoamers, Dow Corning Antifoam A is effective at concentrations in the range of:

- 1 ppm in distilling vegetable oils
- 0.1 ppm in crystallizing sodium bromide
- 3 ppm in textile sizing solutions
- 3 ppm in cooking syrups
- 10 ppm in Geon latex
- 4.5 ppm in yeast fermentation

Dow Corning Antifoam A is odorless, tasteless and physiologically harmless. And it is most economical to use because it is effective in such amazingly low concentrations. Dow Corning Antifoam A can be used as received, dispersed in a solvent or mixed with one of the foaming ingredients.

Dow Corning Antifoam A Emulsion is widely used in the industrial processing of aqueous foamers. Dow Corning Antifoam AF Emulsion is equally effective in aqueous systems and designed for use in the food processing industries.

### see for yourself!

mail coupon TODAY for  
**free sample**

**DOW CORNING SILICONES**

Dow Corning Corporation  
Midland, Mich., Dept. BB-2.

Please send me data and a free sample of—

☐ Dow Corning Antifoam A or  
☐ Dow Corning Antifoam A Emulsion or  
☐ Dow Corning Antifoam AF Emulsion

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 CITY.....ZONE.....STATE.....

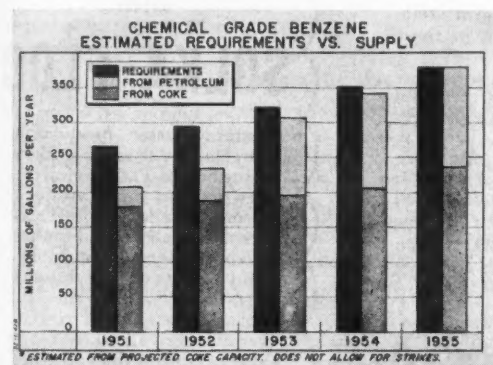
When inquiring check CP 7628 on handy form, pgs. 2-3

CHEMICAL PROCESSING

zene from coal tar. Where it exceeds chemical requirements during the war years, it represents benzene going to gasoline as cumene or otherwise. In most recent years, note that despite expansion of steel facilities the benzene supply from coal is only about 60% of what will be needed.

It was realization of this fact that finally brought benzene from petroleum into the picture. Chemical manufacturers, resin producers, detergent makers, and others knew that their combined demands were exceeding supply and that contracts must be drawn at prices which would encourage benzene output from petroleum sources.

Many petroleum refiners were prepared for this development by somewhat unrelated circumstances. The continually rising demands for higher octane gasoline which accompanied new engine design had fostered long continued research on methods of producing more and more tailor-made branch chain

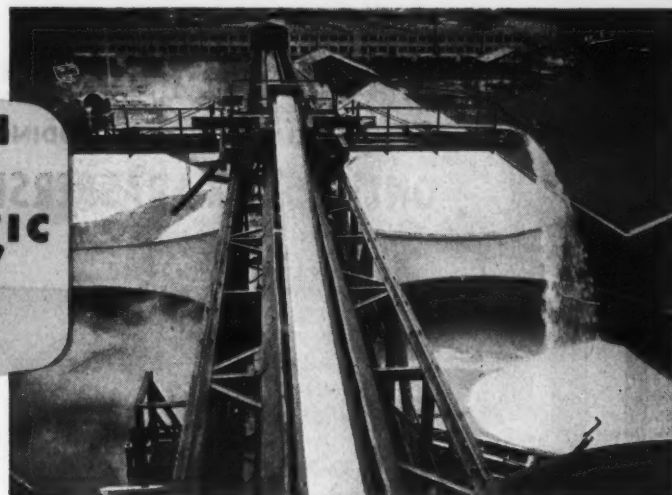


aliphatic and aromatic materials from petroleum streams. Various types of cracking, reforming, hydroforming, and platforming had been developed, many of which could be adapted to the production of benzene and other aromatics. When the prospective demand urgently called for petroleum benzene it began to materialize. In the case of Esso Standard Oil, things were in state of readiness to turn out benzene by extractive distillation of steam cracked distillates, as one route. Outsiders turned to platforming and other methods.

The first significant appearance of petroleum-derived benzene was in 1950. As more facilities came into operation, what began as a trickle swelled into a sizeable stream. In 1951, according to the Tariff Commission, 28 million gallons of benzene were produced from petroleum. In 1952 the volume may have reached 45 million gallons, and, on the basis of projects approved, the output in 1955 is estimated at about 145 million gallons. This will supplement the 235 million gallons which must be either produced by coke ovens and tar distillers or imported to satisfy the total 1955 demand of 380 million gallons. Excluding imported benzene, the supply and requirement totals look like those shown in the other chart.

(From "Petroleum Chemicals—Raw Material Source for the Chemical Industry," by Osgood V. Tracy, General Manager Chemical Products Department, Esso Standard Oil Company, delivered recently before American Coke and Coal Chemicals Institute.)

**Empty-thousand  
tons of  
HOOKER CAUSTIC  
Coming up!**

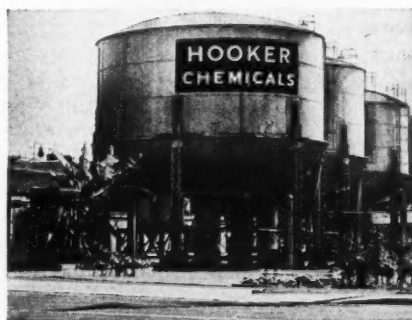


CONVEYORS feed salt to brine tanks for caustic soda and chlorine production in Hooker electrolytic cells.

We will produce more caustic soda this year than ever before in our history.

This would be meaningless, except that it expresses our belief in the future of the chemical industry—and our readiness to keep growing with it as one of your major suppliers of chemical raw materials and intermediates.

Today, more than ever, you can count on Hooker for dependable supplies of caustic soda, chlorine and many other industrial chemicals.



CAUSTIC SODA DISTRIBUTING STATION

*From the Salt of the Earth*

**HOOKER ELECTROCHEMICAL COMPANY**  
NIAGARA FALLS • TACOMA • NEW YORK • CHICAGO • WILMINGTON, CALIF.

## 5 Reasons for Specifying HOOKER Caustic

- 1 Large-tonnage production**—The biggest in nearly 50 years—means dependability of supply for you.
- 2 Quality caustic in the form to meet your needs** 50% and 73% liquid; flake; solid. Drums, tank cars, barges. An impressive background of experience in serving large users of caustic.
- 3 Technical service**—Willing, competent help in safe handling and use of caustic in your process. Experience gained from serving 30 industries is at your disposal.
- 4 Fast, dependable deliveries**—More facilities than ever before for getting caustic to you, on schedule.
- 5 If you use caustic in 1/c/1 quantities**, you can now purchase caustic from a Hooker plant, warehouse or jobber near you. Write us for name and address of your nearest Hooker jobber.

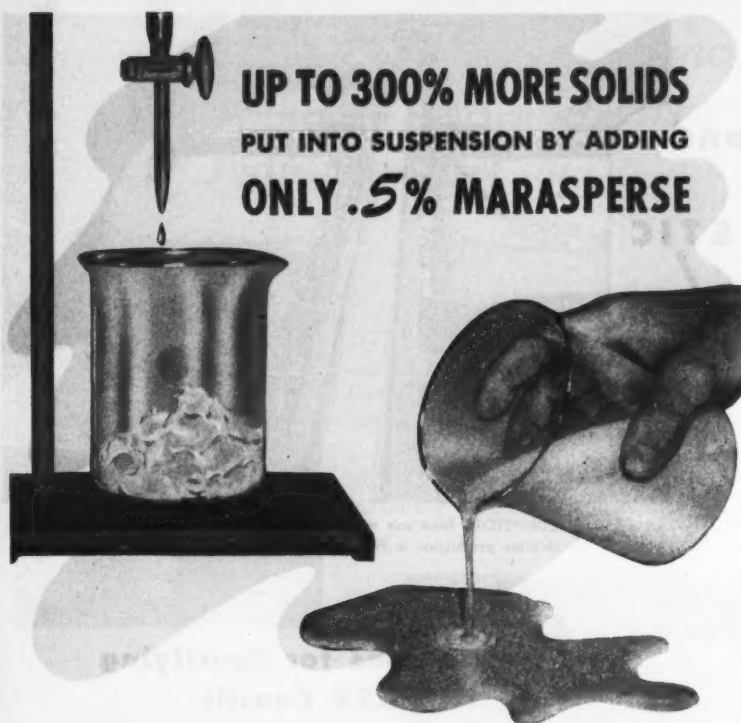
FOR ANALYSES, PRICES, DELIVERY INFORMATION, write Hooker Electrochemical Company, 15 Forty-seventh Street, Niagara Falls, N. Y.—or phone your nearest Hooker sales office.



8-1934

When inquiring check CP 7629 on handy form, pgs. 2-3





**UP TO 300% MORE SOLIDS  
PUT INTO SUSPENSION BY ADDING  
ONLY .5% MARASPERSE**

## MARASPERSE

**THE *low cost*, MORE EFFECTIVE DISPERSANT**

With the addition of as little as only .05% to a maximum of 3.0% of MARASPERSE, (based on weight of solids), from 35% to over 300% MORE SOLIDS MAY BE DISPERSED and maintained in fluid suspension.

MARASPERSE dispersants are MORE EFFECTIVE and considerably MORE ECONOMICAL to use. They are completely soluble in water; are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for information on MARASPERSE products. You will receive complete and specific technical data. Our research staff will welcome the opportunity to cooperate with you.



**MARATHON CORPORATION**  
CHEMICAL DIVISION  
**ROTHSCHILD • WISCONSIN**

When inquiring check CP 7630 on handy form, pgs. 2-3

## MATERIALS

### **Provides improved bond strength for laminating resins . . .**

a complex in which methacrylic acid is coordinated with chromium

**Uses:** "Volan" methacrylate chromic chloride was designed specifically to increase the dry and wet bond strength between glass fabric and polyester laminating resins. Pretreatment of the glass with "Volan" gives a modified surface which reacts with these resins to bond them more strongly to the base material. "Volan" can also be used with other resins, including most of the unsaturated polymerizable materials such as allyl or methacryl monomers, and drying oils, which are polymerized by peroxide catalysts.

In addition, "Volan" is strongly absorbed on negatively charged surfaces such as ceramic materials, cellulose (wood, paper, cotton, rayon, cellophane, starch) and polyamide materials (wool, silk, nylon, synthetic protein fibers, gelatin, zein, and leathers). This suggests application in these fields.

**Features:** Provides a bonding bridge between many resins and base substrates to improve strength of laminates.

**Description:** "Volan" is a Werner type compound in which methacrylic acid is coordinated with chromium to form a highly reactive complex. When applied to negatively charged surfaces such as those mentioned above, the chromium complex is strongly held.

Properties of the product are as follows:

Appearance	dark green liquid
Odor	alcoholic
Boiling point, °F (Isopropanol)	180.3
Flash point, °F (Cleveland Open Cup)	65-70
Specific gravity @20°C	1.026
Molecular weight (Methacrylate chromic chloride)	347.89
Typical analysis, %	
Methacrylate chromic chloride	19-21
Chromium	5.8-6.2
Isopropanol	45-47
Solubility	miscible with H <sub>2</sub> O in all proportions

(Manufactured by E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. . . or for more information check CP 7631 on handy form, pages 2 and 3.)

### **Tabulates specs, properties of nitrogen compounds**

Comprehensive 44-page bulletin describes uses, physical properties, specifications, and characteristics of thirty-five aliphatic nitrogen compounds which are available in commercial quantities. Compounds are used for emulsifying, neutralizing, dissolving, and saponifying.

Physical properties which are tabulated in handy chart include molecular weight, specific gravity, boiling point, vapor pressure, freezing point, solubility, absolute viscosity, refractive index, and heat of vaporization. Numerous charts dealing



## **GAIN MORE POUNDS OF PRODUCT—FASTER**

with

## **SOLKA-FLOC**

Faster, greater production per man hour can be yours using SOLKA-FLOC. Being the newest and most modern form of cellulose, SOLKA-FLOC is ideally suited for use with modern machinery. And because of its *unusually high density*, free-flowing SOLKA-FLOC allows you to handle more alkali cellulose in your process than do other forms of cellulose.

*Far faster reaction and easier handling* are other advantages you'll find in SOLKA-FLOC.

Find out more about this versatile product and how it can help you produce up to 50% more. Write for information and samples to Dept. FB-2 at Boston.

*Prompt shipment guaranteed—pounds to carloads.*

## **BROWN**



COMPANY, Berlin, New Hampshire  
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SOLKA & CELLATE PULPS • SOLKA-FLOC •  
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KOWTOWLS • BERMICO SEWER PIPE, CON-  
DUIT & CORES • ONCO INSULES • CHEMICALS

When inquiring check CP 7632  
on handy form, pgs. 2-3



with individual physical properties are included in separate section. Latter charts deal with vapor pressure, specific heat, viscosity of aqueous solutions of various amines, surface tensions of aqueous solutions, boiling point comparisons, comparative hygroscopicities, thermal conductivity, and volatility. Detailed information is given for characteristics of various constant boiling mixtures.

Separate section gives specifications and methods used by producer in specification testing for various compounds. Also listed are eighteen amines which are available in research quantities.

Bul F-4770B is issued by Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. L. When inquiring specify CP 7633 on handy form, pages 2 and 3.

#### Good source for diazomethane . . .

stable and non-irritating to the skin — report

**Uses:** Recommended for the preparation of diazomethane, a reagent which is versatile for the methylation of carboxylic acids, phenols and enols, for the preparation of heterocyclic compounds, and for use in the Arndt-Eistert reaction.

**Features:** Diazomethane is prepared simply by the action of alkali on this compound, methyl nitroso nitroguanidine. Stable and non-irritating to the skin.

**Description:** N-methyl-N-nitroso-N'-nitroguanidine is a crystalline compound with melting point of 118°C. Crystals have been kept in brown bottles at room temperature for more than a year without decomposition.

Addition of these crystals to a cold 50% aqueous potassium hydroxide solution covered with ether yields diazomethane in 70-90% yield. Numerous experiments have shown that when this ethereal diazomethane solution is distilled and added to an ethereal solution of a pure carboxylic acid, evaporation of the resulting solution leaves the analytically pure methyl ester of the acid.

(Product of the Aldrich Chemical Company, Dept. CP, 161 West Wisconsin Ave., Milwaukee 3, Wis. . . . or for more information check CP 7634 on handy form, pages 2 and 3.)

#### Now producing —400 mesh magnesium powder

Minus 400 mesh magnesium powder is now being produced by a new process that has overcome the technical limitations and fire hazards formerly associated with size reduction of magnesium. Until now, the finest magnesium powder available was —325 mesh, maker reports.

(Atomized Magnesium Powder is a product of Gollwynne Chemicals Corp., Dept. CP, 420 Lexington Ave., New York 17, N. Y. . . . or for more information check CP 7635 on handy form, pages 2 and 3.)

HOW! ANOTHER

# NEW

OF

## SODIUM

# High Surface Sodium

ON INERT SOLIDS

- USES FOR HSS
1. Purification of gases, hydrocarbons and ethers (to remove oxygen, nitrogen, halogen and sulfur compounds, moisture and certain trace amounts of other impurities).
  2. Preparation of Sodium Hydride and Sodamide for in situ use.
  3. Reduction of Metal Salts and Oxides to finely divided metals, e.g., Zn, Fe, Pb, Cu, Ti, Ni, Pt, etc.
  4. Catalyst for hydrocarbon cracking, polymerizations and rearrangement reactions.

Just how reactive do you want your Sodium to be? If you want it at its maximum energy level, in an easily-handled, easily-controlled form, your answer is High Surface Sodium (HSS) on Inert Solids!

Using simple, easy-to-follow techniques, our researchers have applied atomic layers of Metallic Sodium to inert solids such as salt, soda ash, carbon, alumina and sand. HSS is free-flowing over a wide temperature range and has a large surface-to-weight ratio of Sodium. Reactions can be carried out in seconds instead of hours. The high surface area of Sodium in HSS, available for immediate reaction, is the key to its importance to industry.

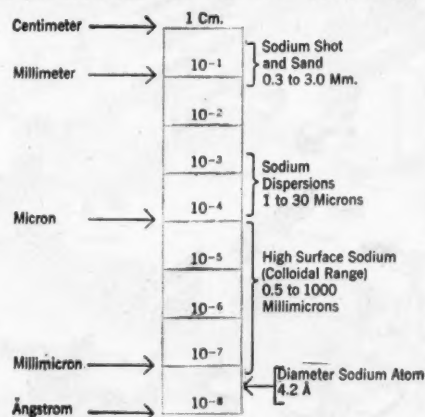
HSS provides, through the complete and rapid reaction of Sodium, the following advantages:

- † Easy control of reaction rates and temperatures above and below the melting point of Sodium
- † Simple adaptation to continuous operations
- † Dry-way reactions of Sodium
- † Greater safety by eliminating flammable solvents
- † High yields
- † Preparation of products in finely divided and reactive states
- † Means of avoiding induction periods

#### APPARENT FILM THICKNESS VS. % Na IN HSS

% Na	Film Thickness on Alumina (Area—160 M <sup>2</sup> /g.)	Film Thickness on Colloidal Carbon (Area—750 M <sup>2</sup> /g.)
5%	1 Atomic Layer	<1 Atomic Layer
15%	Av. 2.5 Atoms Thick	<1 Atomic Layer
25%	Av. 5 Atoms Thick	Av. 1 Atom Thick

#### SODIUM PARTICLE SIZE AND FILM COMPARISONS



Particle size for Sodium Dispersions and HSS can be controlled within narrow ranges.

Send for our interesting new booklet — **HIGH SURFACE SODIUM** — which gives the complete story on this important development in Sodium chemistry.

**U. S. INDUSTRIAL CHEMICALS CO.**  
120 Broadway, New York 5, N. Y.

I'm interested in HSS. Please send your new booklet.

NAME \_\_\_\_\_

POSITION \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

**NOTE:** We do not produce **HIGH SURFACE SODIUM**. Our product is Metallic Sodium from 1 lb. bricks to tank car quantities. However, our technical staff can demonstrate the simplicity of preparing and utilizing HSS in your own plant in available equipment.

**U.S.I.**

Metallic Sodium is manufactured by **National Distillers Chemical Co.** at Ashtabula, Ohio and sold by:

**INDUSTRIAL CHEMICALS CO.**

Divisions of National Distillers Products Corporation

120 Broadway, New York 5, New York

Branches in all principal cities.



When inquiring check CP 7636 on handy form, pgs. 2-3

for soaps and detergents

for water treatment

in cleaning compounds

in paper making

in oil-drilling muds

in textile processing

## BLOCKSON Sodium Phosphates



Blockson Plant . . . Joliet, Ill.

- Sodium Tripolyphosphate
- Tetrasodium Pyrophosphate, Anhydrous
- Sodium Polyphos (Sodium Hexametaphosphate) (Sodium Tetraphosphate)
- Trisodium Phosphate, Crystalline

- Chlorinated Trisodium Phosphate
- Trisodium Phosphate, Monohydrate
- Disodium Phosphate, Anhydrous
- Disodium Phosphate, Crystalline
- Monosodium Phosphate, Anhydrous

- Monosodium Phosphate, Monohydrate
- Sodium Acid Pyrophosphate
- Sodium Silicofluoride
- Sodium Fluoride
- Hygrade Fertilizer

**BLOCKSON**

When inquiring check CP 7637 on handy form, pgs. 2-3

### MATERIALS

#### Porcelain enamel branches into odd-shaped fabrications . . .

value of conveyor screw moving gypsum slurry indicates possible trend

Hard, glassy surface characteristics of porcelain enamel coatings may be utilized in future fabrication of processing equipment. Notable results obtained with a coated conveyor screw moving gypsum slurry indicate possible application of porcelain enamel to other odd-shaped fabrications.

In moving wet, fast setting slurry from mixing hoppers to main gypsum pump, following advantages are reported for porcelain enamel conveyor screw: 1) material moves at even rate since it won't stick to glassy surface, 2) eliminates problem caused by caking and setting of gypsum, 3) prevents jamming of conveyor system, 4) resists abrasive action of slurry and prevents rust, and 5) expensive stainless is replaced by iron as base metal of screw.

(Coatings are fabricated by Barrows Porcelain Enamel Co., Dept. CP, Cincinnati, Ohio.)

#### Versatile glycols are useful in diversified industries

Polyethylene glycols — water-soluble, non-volatile, viscous liquids and solids — are useful in the rubber, pharmaceutical, textile, metal, printing, petroleum, and electronics industries. In addition, they are used in cosmetics, cleaners, polishes, adhesives, resins, and paper products.

Through their primary alcohol groups, they can be converted to mono- and diesters, ethers, amines, acetals, and other compounds of value as chemical intermediates for specialty products. Methoxy polyethylene glycols can be converted in the same manner to diethers, mono-esters, amines, and acetals.

Comprehensive booklet discusses varied uses of the water-soluble liquid and solid polyethylene glycols and the methoxy polyethylene glycols. Separate section of bulletin is devoted to technical and USP specifications of the glycols, and, in addition, complete and detailed descriptions of test methods recommended by manufacturer to assure compliance with these specifications are outlined in bulletin.

Physical properties of various members of the family are tabulated in convenient chart, and seventeen charts in separate section of bulletin deal with such topics as liquid densities of aqueous solutions of liquid and solid polyethylene glycols, freezing ranges of liquid and solid compounds of the family as plotted against their average molecular weights, various phase diagrams, kinematic viscosities, surface tensions, hygroscopicities, and heats of combustion.

Bul F-4772A is issued by Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring about this product specify CP 7638 on handy Reader Service slip between pages 2 and 3.



## MATERIALS

### Can be formed or molded to fit articles . . .

packaging material bondable to any known surface

Uses: Packaging material.

Features: Can be formed or molded in any shape to fit the article it is to protect, can be molded with a covering of cloth or other material on either side, and can be bonded to any known surface. It is fungus proof and will not support combustion.

Description: Calresin CPC is a polyvinyl chloride material which has demonstrated shock proof qualities in Armed Service testing. Reportedly, under various weights it does not compress the same as air foam products but does compress considerably more than many types of rubber now on the market.

Various grades in all colors are supplied and engineered specifically to the article to be protected.

(Manufactured by Calresin Corp., Dept. CP, 333 N. Santa Anita, Arcadia, Calif. . . . or for more information check CP 7639 on handy form, pages 2 and 3.)

### Illustrates facilities for product testing

Eighty different methods for testing, inspecting, and analyzing some ninety different types of products are listed in four-page booklet. Facilities for conducting various tests and certification work are illustrated in the publication.

Various topics which are described include non-destructive testing; testing for performance; corrosion resistance of protective coatings; chemical analysis; development of specifications; product certification; and sampling.

Bulletin describing testing facilities is issued by American Standards Testing Bureau, Inc., Dept. CP, 44 Trinity Place, New York 6, N. Y. When inquiring specify CP 7640 on handy form, pages 2 and 3.

For more information on product at right, specify CP 7641 . . . see information request blank between pages 2-3.



**SYSTEM KEPT CLEAN 7 YEARS.** The natural detergency of Circo XXX Heat-Transfer Oil, circulated by these three gear pumps for seven years, has kept the lines and jackets open and clean.



**OUT ROLLS THE FELT.** Every minute each of these machines impregnates several hundred feet of felt with asphalt. In view of such output, shutdowns would be costly. But Circo XXX helps keep production steady.

## COSTLY SHUTDOWNS AVERTED BY CIRCO XXX HEAT-TRANSFER OIL

Trouble lay ahead for Bird and Son, Inc., makers of asphalt roofing and shingles. The heat-transfer oil this company was using broke down under the high temperature and coated the walls of jackets and pipes with an insulating sludge that retarded heat flow. They knew something had to be done or costly shutdowns and frequent oil changes would be the penalty.

Taking the advice of a Sun representative, the plant changed to Circo XXX Heat-Transfer Oil.

Circo's natural detergency loosened the sludge deposits and carried them off to the filters. The system was soon clean and has remained clean ever since. The original charge of Circo shows no signs of deterioration, and has now been serving for seven years. Uninterrupted production, low maintenance costs, and thousands of dollars saved in oil bills—that is the payoff this plant has enjoyed by shifting to Circo XXX. Your plant can probably benefit the same way. Send in the coupon below.



**ASPHALT IS KEPT AT 450F** in the section where the weather-resistant surface is applied. This high temperature puts a heat-transfer oil to a real test. Circo XXX, after seven years' service, is good as new.

### SUN OIL COMPANY, Dept. CP-2 Philadelphia 3, Pa.

I am having trouble that may be due to inadequate heat-transfer oil. I should like to have: ☐ the services of a Sun representative; ☐ a manual describing heat-transfer oils and systems.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

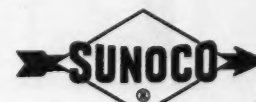
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**TECHNICAL ASSISTANCE AVAILABLE.** Sun's engineers are at your service for consultation on heat-transfer troubles. It will pay you to utilize the broad experience they have gained working with many different industries.

## SUN INDUSTRIAL PRODUCTS

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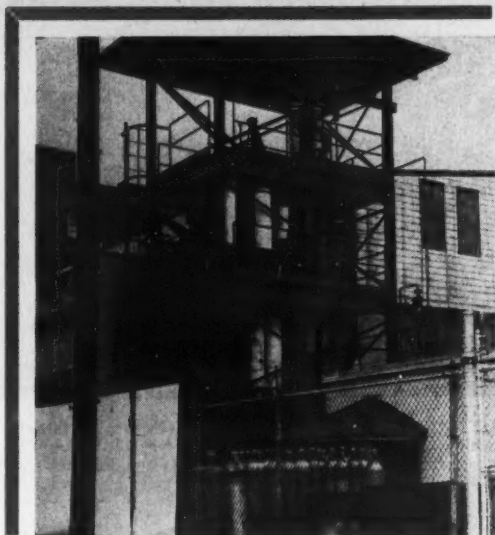




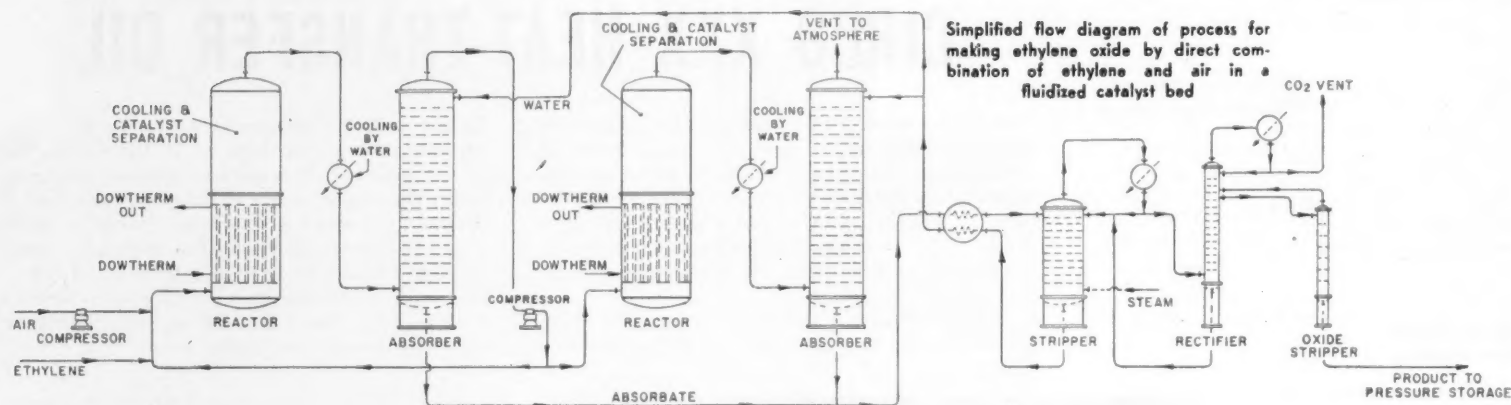
# ETHYLENE OXIDE

## Produced in Fluid Catalyst Bed By Atlantic-Vulcan Process

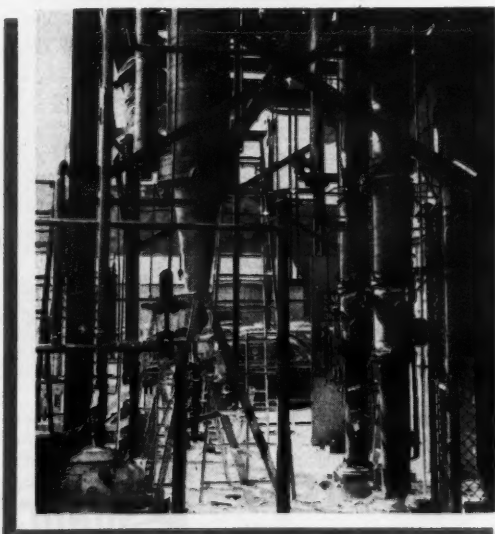
Tube-bundle reactor design and fluidized bed keep yield up by minimizing secondary reaction



View of ethylene oxide pilot plant operated by Vulcan Copper & Supply in Cincinnati



Another view of Vulcan's pilot plant shows fluid bed reactor at left, ethylene oxide recovery and purification section at right



WRAPS have just been taken off a process for production of ethylene oxide from ethylene and air by direct oxidation in a fluidized catalytic bed. One big advantage reported for the process is the ease with which the temperature of the reaction zone can be controlled. The overall reaction is highly exothermic, because of a secondary reaction in which ethylene is converted to carbon dioxide and water, and could "run away" if not controlled properly. Localized overheating would lower the yield of ethylene oxide because higher temperatures favor the secondary reaction. The fluidized bed, of course, minimizes the chance of this happening.

The reactor is the key to success of the process, and much of its construction details are still marked "secret." The bottom section holds a bundle of tubes in which the captive silver catalyst is held in a fluidized state. Actually, the catalyst level is somewhat above the reactor tubes. Specially designed orifices maintain uniform pressure drop over the tubes. Boiling Dowtherm surrounds the tubes, re-

moving the heat of reaction, and is condensed in a waste heat boiler; steam generated is used in the process.

The conventional fluidized bed reactor is the "back mixing" type in which the reactants and products are mixed together within the reactor and the effluent consists of this uniform (theoretically, at least) mixture. A unique feature of the Atlantic-Vulcan process is the development of a fluid reactor which eliminates back mixing, thereby minimizing the effect of the secondary reaction. Process is multi-stage with recycle on the first stage, and is shown in the accompanying simplified flow diagram. Ethylene, air, and recycled gas are fed to the primary reactor (or a number of reactors in parallel) under pressure. Preheating is unnecessary because the gas heats up very rapidly once it enters the reactor. The ethylene used should be low in sulfur, acetylene, and halogens; almost all of that being produced commercially is satisfactory.

Gas is partially cooled as it leaves the tubes, and

passes up through a system for removing the small amount of catalyst escaping from the tube section with the gas. It then leaves the reactor, is cooled further in a water-cooled heat exchanger, and enters the bottom of a tray type absorber. Ethylene oxide is removed by the down-flowing cool water stream.

The gas leaving the top of the absorber is recompressed and split into two streams. Part goes back as recycle gas, while the other is sent to the second reactor-absorber combination. Gas from the top of the second absorber is vented to the atmosphere.

The combined absorbate is let down to atmospheric pressure and put through a heat exchanger where it loses heat to water leaving the bottom of the steam stripper. Ethylene oxide from the stripper is sent to a rectifier for water removal and purification. If an extremely high purity product is required (purity can be as high as 99.9% and above), an oxide stripper follows the rectifier. Product is a liquid with a boiling point of about 51°F, and is stored under pressure.

Water from the stripper goes to a tank after giving up heat to the absorbate coming from the absorbers. Some water is bled off here, and the rest is cooled and pumped back to the absorbers.

Process is usually operated to give a yield of 55 to 60% ethylene oxide on a molal basis because this appears to be the optimum range. However, it can be operated to give a higher yield where economically justified. Plants can be just about any size, but the minimum economic size in the United States appears to be 20 million pounds of ethylene oxide per year. The most important consideration in the economic picture is to build the plant close to a source of ethylene.

(The Atlantic-Vulcan process grew out of research started by Atlantic Refining Co. Later full-scale development was carried to completion by the company which now licenses the process, The Vulcan Copper & Supply Co., Dept. CP, 120 Sycamore St., Cincinnati 2, Ohio . . . or for more information check CP 7642 on handy form, pages 2 and 3.)

#### **Silica content of boiler feedwater reduced to 0.01 ppm by mixed bed demineralizing . . .**

method appears more economical for low solids water than two-step ion exchange

Boiler feedwater with 0.01 ppm silica can be produced by mixed bed demineralizing. Method appears to have a lower overall cost than two-step ion exchange when used for treating a low solids water. Cost and effectiveness of silica removal by the two methods are compared in a paper by Mr. M. E. Gilwood, Director of Research of The Permutit Company. Paper was presented at a recent meeting of the American Institute of Chemical Engineers in Chicago.

Experience and research in operating boilers above 1000 psi have indicated importance of maintaining low silica concentration in boiler feedwater. High silica levels result in deposits on turbine blades. Since make-up water is concentrated many times in boiler, engineers frequently specify that treated make-up water must contain no more than 0.1 ppm SiO<sub>2</sub>.

(Continued on next page)

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**CREATIVE  
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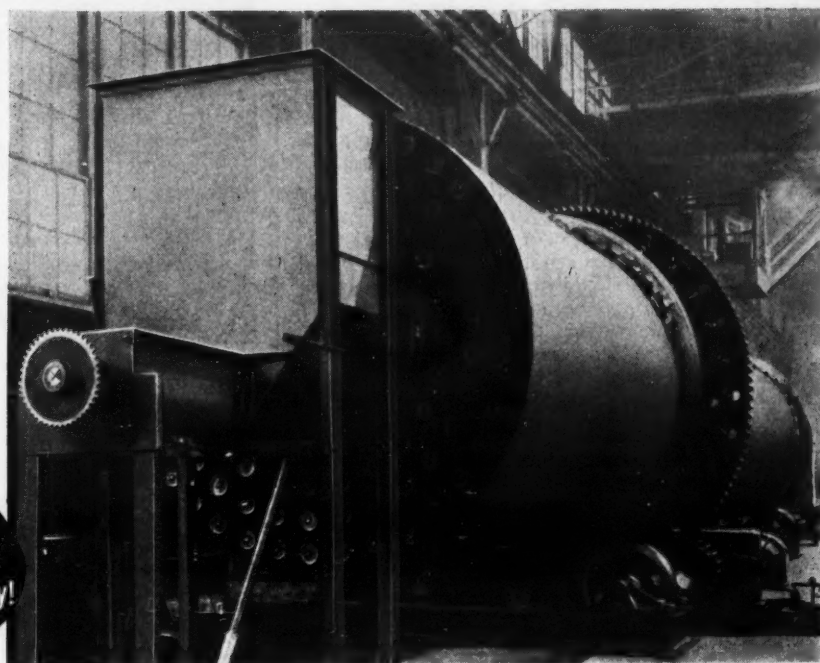
#### **Other General American Equipment:**

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## **LOUISVILLE ROTARY DRYERS**

**utilize 85% of all  
available heat in steam!**



Extremely high thermal efficiency is just one of the basic engineering advantages of Louisville steam tube Dryers. Any danger of case hardening is eliminated. Because of a very low air flow, finely divided material lost from the dryer cylinder is relatively small even though dryer may be handling unusually dusty material. Arrangements are included in each Louisville Dryer for complete and continuous removal of condensed steam . . . a unique steam

joint eliminates all thrust bearings.

Louisville Dryers are safe, automatic and economical. They require a minimum of labor, supervision and maintenance . . . and are carefully built for years of dependable service.

Write for new treatise on rotary dryers. Or call in a Louisville engineer. Have him look over your drying operation. Possibly a "predetermined", job-fitted Louisville Dryer can turn a losing operation into a profit maker.

## **Louisville Drying Machinery Unit**

Over 50 years of creative drying engineering

### **GENERAL AMERICAN TRANSPORTATION CORPORATION**

Dryer Sales Office: Hoffman Bldg., 139 So. Fourth Street, Louisville 2, Kentucky

General Offices: 135 South La Salle Street, Chicago 90, Illinois

Offices in all principal cities

In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario

When inquiring check CP 7643 on handy form, pgs. 2-3

(Continued from preceding page)

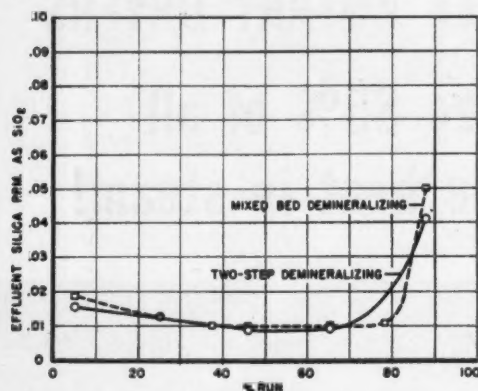


Fig 1—Results of test runs showing that as low as 0.01 ppm SiO<sub>2</sub> can be obtained by mixed bed and also by two-step demineralization

Commercial development of strongly basic anion exchangers about six years ago made it possible to produce water low in electrolyte content and dissolved silica by ion exchange. Anion exchangers were first employed in the two-step demineralization process employing intermediate degasification between cation exchanger and highly basic anion exchanger. A number of large plants have installed two-step process during past few years.

Mixed bed demineralization employing a mixture of cation and anion exchangers in a single bed has recently been developed more fully for commercial use. This method provides in effect a series treatment by a great number of individual demineralizing steps with result that electrolyte impurities are reduced to vanishing point. Inorganic impurities are so low that they are checked only by conductivity measurements. Silica content can be reduced to an extremely low level.

Automatic mixed bed demineralizer was recently installed at a large steam electric station in New York State. Two units 42" in diameter by 7' high, are provided. Each is capable of treating 48 gpm of water. Plant is to provide make-up water for a 1450 psi boiler having about 0.5% make-up. Plant installation is virtually complete but no test runs have yet been made.

Considerable test work indicates that silica content can be reduced to as low as 0.01 ppm by mixed bed demineralization. Fig 1 illustrates some of best test runs employing this method and the two-step process. As shown, two-step method can also produce low silica content water. Extremely careful operating control is necessary to continuously obtain results approaching these in large scale plant operation. Low silica content is not so difficult to obtain when silica to total anions ratio in incoming water is low, less than the ratio 1:10 to 1:5.

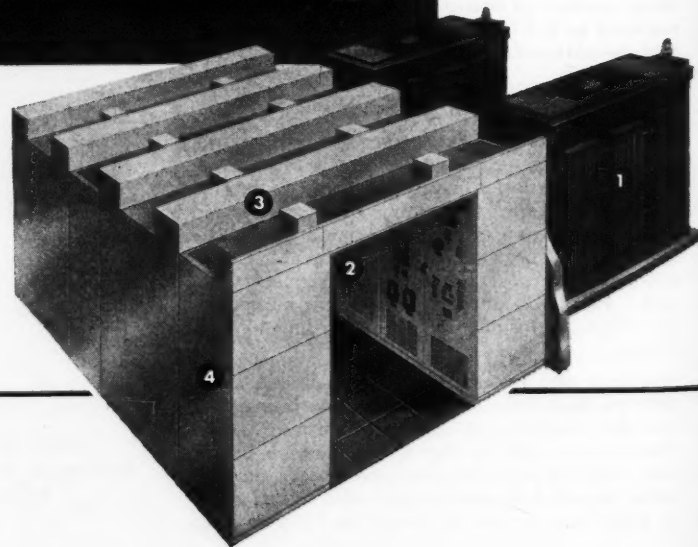
Fig 2 illustrates a comparison of mixed bed and two-step demineralizing costs on various waters. It appears that a lower overall cost can be obtained by mixed bed process when treating a low solids water like New York City Catskill supply. Study

# Heavy d-c current...low d-c voltage



10,000 ampere I.T.E. Mechanical Rectifier supplying d-c to electrolytic chlorine cell line. Note how neatly and compactly the contact mechanism (A) and control panel (B) are arranged.

A complete I.T.E. Mechanical Rectifier installation includes: transformer and commutating reactor (1), contact mechanism (2), overhead bus (3), and d-c switchgear (4). No additional auxiliary equipment is necessary.





# .....with highest efficiency!

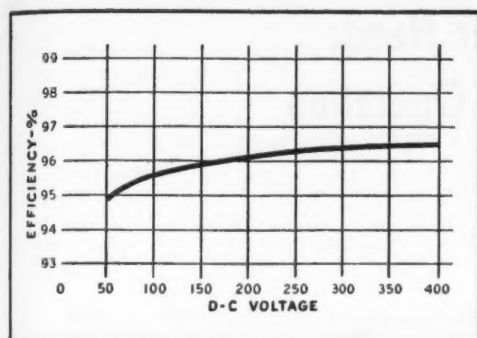


FIG. 1

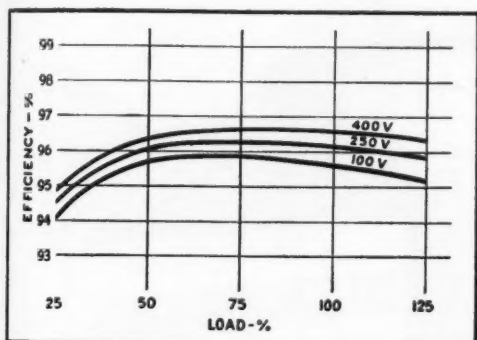


FIG. 2

## Send for details

Bulletin 5205 explains how, from a-c line to d-c bus, the I-T-E Mechanical Rectifier gives you efficiency of 96%—and higher. Send for a copy today.

5,000-10,000 d-c amperes—or multiples thereof—available between 50 and 400 volts, with an over-all efficiency of 94%-96%

Chief advantage of the I-T-E Mechanical Rectifier is its consistently high efficiency in the 50-400 volt range. Note (Fig. 1) how high the efficiency is even when operating voltage is as low as 50 v.

Note (Fig. 2) how high efficiency is maintained even at 25% of rated load current.

High efficiency of the I-T-E Mechanical Rectifier is substantiated by thirty-seven units in service—more than 200,000 amperes of connected load.

## ADVANTAGES OF LOWER VOLTAGES

Lower operating voltages are less hazardous. Leakage losses to ground, the plague of electrolytic cell lines, are substantially less when operating voltage is under 400 volts d-c. Greater flexibility can be designed into systems. Large or small quantities of electrolytic products can be manufactured economically.

## SUBSTANTIAL SAVINGS

High efficiency means big savings. Assume a 10,000 kw load, a power rate of ½ cent per kwhr, and continuous operation at 250 volts d-c. Then, for each 1% improvement in over-all efficiency, yearly savings amount to \$3200 or more.

## OTHER BENEFITS

The compact I-T-E Mechanical Rectifier saves space. It requires no special buildings, foundations, cooling or ventilation.

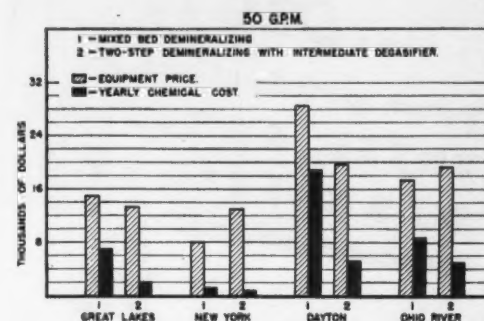


Fig. 2—Cost comparison between two ion exchange methods for treating boiler feedwater

indicates that when treating other typical water supplies, mixed bed process is somewhat more costly than two-step method. Further tests and plant experience are necessary to determine if it is possible to continuously produce water containing less than 0.01 ppm silica through the use of mixed bed demineralizing.

(The Permutit Company, Dept. CP, 330 W. 42nd St., New York 36, N. Y.)

## Government stockpiles more than 250 tons of titanium . . .

after 6-9 month storage, average hardness is within 2 points of original state

As anticipated in the April issue of *CHEMICAL PROCESSING*, page 72, the US government is one of the large scale consumers of tonnage-produced titanium metal. More than 250 tons of the metal have been stockpiled by the General Services Administration to supply future military demand, reported Dr. Edwin A. Gee, section manager of Du Pont Company's titanium development. In his address to the National Metal Congress, Institute of Metals Div. of American Institute of Mining and Metallurgical Engineers meeting in Philadelphia, Dr. Gee disclosed that the company's batch-size production has increased from 100 to 3000 lb.

Hardness of stockpiled titanium is all below Brinell Hardness Number (203) specified by government; and it ranges from low of 141 to maximum of 200, with an average of 172. Following tabulation shows quality of titanium metal in stockpile:

	% Ti	% Fe	% Ni	% Mg	% Cl	Brinell Hardness Number
Govt specs	99.3	.25	.03	.10	.15	203
Actual	99.65	.16	.023	.05	.11	172

In recent testing of metal's storage stability, average hardness was found to be within two points of tabulated figures. Related tests have demonstrated storage stability in connection with other factors such as tensile strength and yield strength.

(Information received through the courtesy of E. I. du Pont de Nemours & Co., Department CP, Wilmington, Delaware.)



## MECHANICAL RECTIFIERS

I-T-E CIRCUIT BREAKER CO. • Rectifier Division • 19th and Hamilton Sts. • Phila. 30, Pa.

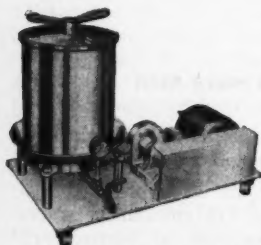
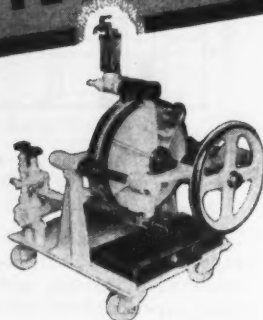
EPD—Canadian Mfg. and Sales: Eastern Power Devices, Ltd., Toronto

When inquiring check CP 7644 on handy form, pgs. 2-3

# ..... Step Up your production with ERTEL ASBESTOS DISK FILTERS!

## 1. EBW MODEL PORTABLE FILTER

A highly efficient, readily portable filter that meets requirements for smaller capacities. Performance-proven over the years in many hundreds of plants throughout the world. Perhaps Ertel EBW model can economically speed up your production. Ask for full particulars — an EBW is in operation in your vicinity, right now!



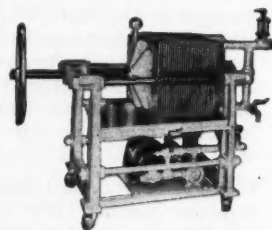
## 2. ECD MODEL ENCLOSED DISK FILTER

Typical of Ertel craftsmanship is this Positive Seal Multi-Purpose Disk Filter. The outstanding feature of independent filtering elements provides positive seal

of any type filtering medium. Cylinder prevents loss of liquid — particularly well adapted for volatile liquids as well as many other ordinary filtering requirements.

## 3. EU MODEL UTILITY FILTER

The Ertel Filter that's designed to use asbestos filter sheets, filter cloth, filter paper or filter cloth and filter aid. Standard units in bronze, nickel plated, stainless steel or hard rubber circulatory system. Comparison and operation records prove the EU Model unmatched in design, versatility and operation-life. Experience has shown that the great majority of filtration problems can be solved by your consultation with our engineers. May we help you?



### ASK FOR ILLUSTRATED CATALOG

Describes the complete line of precision built Ertel Liquid Handling Equipment for Industry.

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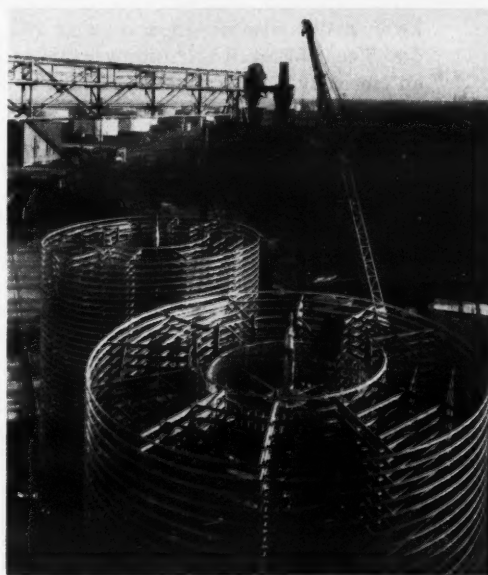
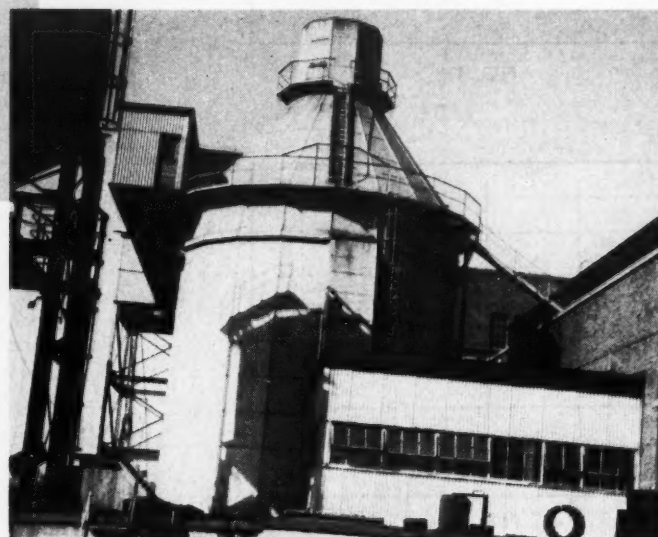
*ideas*

## Less Maintenance, Lower Power Needs Characterize Turbo-type Dryer Operation in Milorganite Production

High holding capacity  
and elimination of back  
feed are other features

General view of one turbo-type dryer  
(second dryer is directly in back of  
pictured unit). Actual height of  
shelve area is 53'; stack and foundation  
account for other 32' of the  
overall height of 85'. Feed conveyors  
are housed in structure at top left  
side of dryer

Internal structure and design are  
disclosed by this view of partially  
completed dryers



REPRESENTING the largest turbo-type dryers built to date are the two units used in the production of Milorganite at the Milwaukee Sewerage Commission, Jones Island, Milwaukee, Wis. Their overall height is some 85'. They were designed by the Wyssmont Co. of Long Island City, N. Y. in collaboration with the engineering staff of the Commission. Mr. William Landsiedel was Chief Designer for the Commission whose Chief Engineer and General Manager is Mr. Raymond D. Leary. One dryer has been in operation since June 1951 and the other since January 1952.

Milorganite is derived from the city's sewage and has its chief use as a fertilizer, although recent research (see April 1952 CHEMICAL PROCESSING, page 28) indicates it to be a source for vitamin B-12 as well.

Essentially the manufacture of Milorganite starts out with screening, aeration and sedimentation of the sewage. Resultant product is a sludge. This material

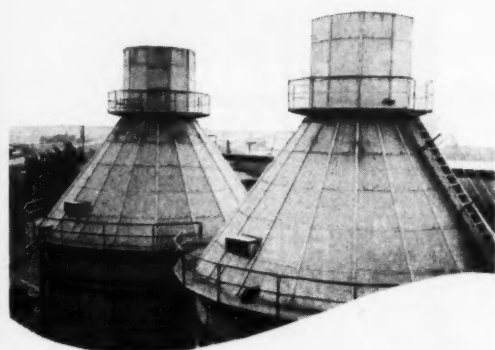


is filtered on vacuum-type filters and then is conveyed to the \*Turbo Dryers. Latter remove approximately 70% of moisture from the cake which is subjected to further drying in rotary-type dryers.

Advantages of the turbo-type dryer design are: 1) elimination of back feed 2) economy in power and heat requirements, 3) low maintenance, 4) high holding capacity, 5) low floor area, and 6) outdoor installation.

Dryers are 35' in diameter and, as mentioned, 85' in overall height. They are built in the form of a 20-sided polygon whose wall is 3' beyond the outer rim of the shelves. Enclosing wall is 9" thick, having 4" insulation and with the outside and inside sheathed with flat Transite (Johns-Manville) sheets.

Internal construction consists of a series of 58 annular shelves spaced 9" apart (height of tray area is 53'). Seven fans are mounted on a central vertical axis within the open core formed by the shelves. Latter are made up of 36 individual trays with radial gaps in between through which the material is swept onto the tray below. Total drying area of one dryer is 18,000 sq ft.



Closeup of dryers' stacks. Enclosing wall of 20-sided polygon is 9" thick

The trays revolve in one direction at 0.4 to 1 rpm while the fans in the center rotate in the opposite direction at 96-100 rpm. Total power requirement is 65 hp.

Sludge to be dried is belt-conveyed to the top of the dryer where it is deposited on the top shelf as it revolves under a feed opening. Stationary levelers spread the material out to a layer of uniform thickness. Then, after one revolution on the tray, the material is conducted by wiper arms to the tray below. The repeated piling and leveling action makes for high drying efficiency as new surfaces are being exposed to the drying air on each shelf. Average moisture of the feed is 84% while the discharge averages 60%. Evaporation rate is 22,000 to 24,000 lb/hr per dryer.

Design specifications allow for air to be circulated at the rate of 40,000 cfm. Air is heated by flue gas using 3 cu ft of 545-Btu gas/lb water evaporation. Temperature of incoming air is 800-850°F, while the exhaust air is at 235°F. The temperature inside the dryer is zoned:—highest temperature zone near the top is 320°F; the lowest near the bottom is 220°F.

An increase in the filtering capacity is now being  
(Continued on next page)



Industry comes  
to A. O. Smith  
with  
Heat Exchanger  
Problems

## A.O. Smith

### Your best source for HIGH-PRESSURE Heat Exchangers

Here, at A. O. Smith, is a matchless combination of designing, engineering and fabricating skills, experience and equipment on which to draw in solving any heat exchanger problem. Dedicated to the search and development of better techniques, A. O. Smith engineers have created many "firsts" in the pressure-vessel and heat-exchanger fields.

For high-pressure service, the exclusive A. O. Smith MULTI-LAYER process was conceived and designed for constructing thick-walled vessels and exchangers. For reliable corrosive service at minimum cost, another exclusive was developed: the SMITHlining process of permanently bonding stainless or other materials to carbon plate.

These, plus a variety of other techniques in utilizing materials of all types, are implemented by complete fabricating facilities for producing equipment, fixtures and fittings. As a result, A. O. Smith engineers are able to develop the best solution of any heat-exchanger problem.

Proof of performance is obtained with A. O. Smith's own testing procedures. Full-scale vessels are tested to destruction at isolated test stations where pressures up to 50,000 psi can be applied. Materials are tested prior to fabrication in the company's chemical, physical, metallurgical and spectrographic laboratories.

• Three high-pressure heat exchangers are shown in the upper illustration. They are designed for 2400 psi on the tube side and have modified Bridgman closures for channel covers.

• The lower illustration is a view of one of the above heat exchangers prior to completion. It shows detail of channel construction. The tube sheet was drilled by an A. O. Smith high-precision method to a degree of perfection far above accepted standards, to insure against leakage.

• • •

Problems are resolved by research groups whose combined experience and accumulated data are without parallel. Closely associated are the experts in tool and fixture design who have their own unexcelled facilities.

For high-pressure or conventional heat exchangers, whether for chemical, petro-chemical, petroleum refining or power applications, A. O. Smith is your best source.

Your inquiry will receive prompt and expert handling.



# A.O. Smith

VESSELS • HEAT EXCHANGERS

Chicago 4 • Cleveland 15 • Dallas 2 • Denver 2 • Houston 2  
Los Angeles 22 • Midland 5, Texas • New Orleans 12 • New York 17  
Pittsburgh 19 • San Francisco 4 • Seattle 1 • Tulsa 3  
Washington 6, D.C.

International Division: Milwaukee 1

When inquiring check CP 7646 on handy form, pgs. 2-3



## IDEAS

(Continued from preceding page)

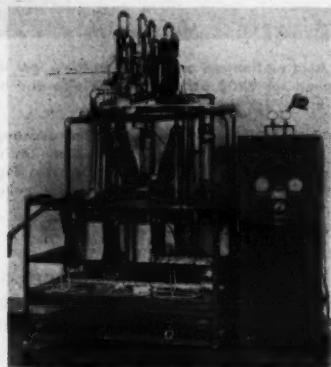
effected at the Commission's plant and once this is completed, the full drying capacity of the dryers will be realized. Resulting will be an estimated 30% increase in Milorganite production.

(Contributing information and illustrative material to the preparation of this article were Mr. Landsiedel and Mr. Leary. \*Turbo Dryer is the trade name for the design of the Wyssmont Co., Dept. CP, 31-04G Northern Blvd., Long Island City 1, N. Y. . . . or for more information check CP 7647 on handy form, pages 2 and 3.)

### Film processing unit utilizes flexible plastic pipe . . .

resists corrosion and can be rapidly installed

Flexible plastic piping is being utilized on a high-speed film strip processing unit. Piping of this material was selected because it resists corrosive action of film proc-



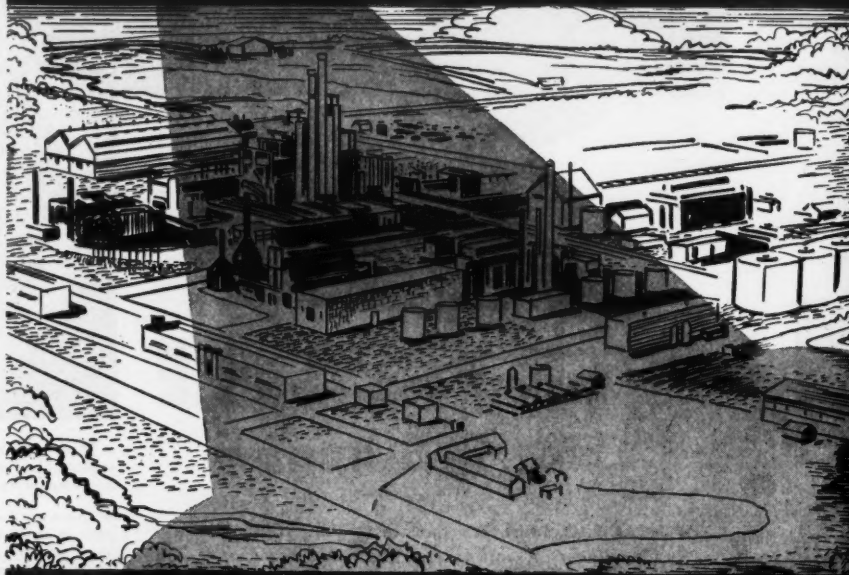
Flexibility of plastic pipe facilitated installation on film processing unit

essing solutions. Also it can be easily cut to desired length and its flexibility facilitates rapid installation of pipe.

Experimental device, on which Carlon plastic pipe and fittings are being used, was made by Equipment Engineering Div. of Raytheon Manufacturing Co. of Waltham, Mass. Unit presented a complex piping problem, as can be seen in accompanying photograph.

Flexible plastic pipe is guaranteed against rot, rust, and electrolytic corrosion. In addition, it is im-

# A STEAM TRAP CASTS A



## THINGS STEAM TRAPS AFFECT

1. HEAT-UP OR START-UP TIME
2. RATE OF PRODUCTION
3. STEAM WASTE
4. FUEL WASTE
5. CONTINUITY OF OPERATION
6. MAINTENANCE COST



*It Pays  
to Specify*

# ARMSTRONG S

# MIGHTY BIG SHADOW

IDEAS

REASON	HOW ARMSTRONG TRAPS MEET THE NEED	EXAMPLE
When steam is turned on, large amounts of condensate and air must be removed before equipment heats up.	Condensate and air removed as fast as they reach trap. Reliable data insures you get trap with adequate safety factor to meet conditions.	<u>40 Minute Faster Heat-up</u> —drying oven at pharmaceutical plant heats up 40 minutes sooner with Armstrong "Blast" traps.
Quick heat-up, maximum temperatures essential for maximum output.	Air which reduces temperature and heat transfer discharged automatically; condensate discharged at steam temperature; equipment kept full of hot, dry steam.	<u>30% Greater Output</u> — jacketed kettles produce 30% more at Canadian plant since changing to Armstrong traps.
When steam gets past traps, boiler capacity may be inadequate—this is bad even if you could afford the fuel waste.	When steam floats the bucket the trap closes. No steam ever reaches discharge orifice, even when there is no condensate load. Heat treated chrome steel valve parts, precision ground and lapped, resist wire drawing and wear, stay leak tight for a long, long time.	<u>Steam Savings Eliminate Need for New Boiler</u> —chemical plant shelves plans to buy larger boiler after installing Armstrong Traps.
Why burn fuel to generate steam that does no useful work . . . blows through traps, for example?		<u>33½% Reduction in Fuel Bill</u> — after trapping vats with Armstrongs at Missouri plant.
When traps are inoperative or down for repairs, unit being drained may be "off the line."	Nothing to clog, seize, stick or collapse! Large orifice. Self-scrubbing action cleans out ordinary dirt and scale. "Frictionless" leverage with wear points heavily reinforced for long life. Hardened chrome steel valve and seat. Wear and corrosion-resistant stainless trim.	<u>Maintenance Time Cut 30%</u> — Illinois user says, "Unequalled dependability, simplicity of design means repairs can be made quickly" (with minimum equipment downtime).
Traps that don't "wear well" take a lot of manhours for repair.		<u>50% Less Trap Maintenance</u> — only half as many manhours devoted to traps since installing Armstrongs throughout large Midwestern plant.

pervious to action of most chemicals. Weighing only  $\frac{1}{8}$  as much as steel pipe, material is recommended for use within temperature range from -70 to 140°F. It also has good burst characteristics. For example, 1" pipe has burst pressure of 200 psi.

In tests made on film processing unit, liquid was pumped through piping system and pressure drop of only 5 psi was noted.

Manufacturer's line of plastic fittings facilitate installation of all-plastic systems or the joining of plastic pipe system to a previously installed metallic system. Plastic pipe and fittings are available in all standard pipe sizes up to 6".

(Flexible plastic pipe and fittings are furnished by Carlon Products Corp., Dept. CP, 10225 Meech Ave., Cleveland 5, Ohio.)

## Scale model duplicates fork truck features

An authentic reproduction of manufacturer's fork lift truck (Model 480-P) has been designed on a 1/16 scale to please gadgeteers, engineers, and prospective engineers above the age of three.

Constructed of steel and plastic to withstand rough handling, the tiny model captures in intricate detail many of the basic features of manufacturer's original fork lift truck. Moving a tiny gear shift lever tilts the mast to varied angles; forks may be raised and lowered by means of a lever projecting slightly from the rear of the "truck." Miniature measures 5" high when mast is lowered, 8" from the rear to tip of its shiny forks.

(Models are distributed through Advertising Div., Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio.)

## No organic material in white commercial Al trihydrate

A snow-white, high-purity grade of aluminum trihydrate is available in commercial quantities this month. The organic-free material does not

(Continued on next page)



# STEAM TRAPS

For more information on product at left, specify CP 7648 . . . see information request blank between pages 2-33.



## ALLIS-CHALMERS Double Suction PUMPS

GENEROUS STUFFING BOX LENGTH contains sufficient packing to keep stuffing box maintenance low. Provision is made for sealing water connections or for grease seal if these are required.

STANDARD AND SPECIAL MATERIALS available for many types of service where government regulations permit. Iron, bronze, stainless steel and combinations of these materials handle both alkaline and acid solutions.

HEAVY, HORIZONTAL SPLIT CAST IRON CASING construction with suction and discharge nozzles located in lower half for easy inspection without disturbing piping.

COUPLINGS are usually of the pin and rubber bushing type with Magic-Grip bushing for pump and drive shaft. Removal for maintenance is easy.

BALL BEARINGS may be furnished for either oil or grease lubrication. Sleeve bearings also available in larger sizes.

CAST SHAFT SLEEVES, not commercial tubing, protect the shaft from wear. Sleeves extend through the stuffing box and seal at the impeller hub.

DOUBLE SUCTION ENCLOSED IMPELLER is precision turned and carefully balanced to assure vibrationless operation and close wearing ring clearance. Water passages are hand finished to a smooth surface.

STANDARD SIZES carried in stock range from 10 to 7000 gpm with heads as high as 475 feet. Larger sizes are available.

# Built for LONG LIFE



Allis-Chalmers Type S pumps. Extra metal thicknesses, extra strong parts, extra construction features, and extra careful workmanship are always there to give you long life, low maintenance and low cost per gallon pumped.

Every Allis-Chalmers double suction pump is carefully tested on the most modern pump testing equipment in the industry. Each installation is individually

**H** EAVY DUTY CONSTRUCTION—no skimping, no corner cutting—is what you can look for in

engineered by men whose experience in thousands of pump installations will give exactly the right pump for your needs.

Allis-Chalmers can take full responsibility for your pumping operation because Allis-Chalmers can furnish the complete installation — pump, motor, control and drive—all built of coordinated design by one manufacturer. Efficient operation is assured and maintenance costs are kept low.

Whatever your pumping problem, call your nearby Allis-Chalmers Authorized Dealer or District Office. Or write to Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 08B6146.

A-3580  
Texrope, Vari-Pitch and Magic-Grip are Allis-Chalmers trademarks.

FREE slide films on pump theory, application and maintenance.  
Ask your Allis-Chalmers representative.

## ALLIS-CHALMERS



Sold . . .

Applied . . .

Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.



MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

## IDEAS

(Continued from preceding page)

require any treatment with oxidizing agents to render it acceptable for production of pure-white end products.

(Produced by Reynolds Metals Co., Dept. CP, 2500 S. Third St., Louisville, Ky. . . or for more information check CP 7650 on handy form, pgs. 2-3.)

### Provides for rapid measurement of paper stiffness . . .

accurate, sensitive unit may also prove useful in testing thin plastic sheets

Sensitive instrument which rapidly and conveniently measures the stiffness of commercial papers has been developed. Tester gives consistent values of stiffness independent of specimen dimensions and angle of bending within a usefully wide range. Unit is also expected to prove to be of value in evaluating the stiffness of thin plastic sheet, textiles, etc.

In many paper products — such as paper towels, currency, and playing cards — stiffness is an important criteria of usefulness. Stiffness of wrappers and containers is an important consideration in use of automatic packaging machinery. Stiffness is also a factor in "feel" and "rattle" by which quality of many papers is judged.

Many methods have been proposed in past for determining stiffness of paper and similar materials. Most of these methods, however, evaluated paper stiffness empirically and in a relative manner. Such arbitrary quantities were determined as the force required to bend a strip of a given size through a certain angle or to deflect the end of a strip a given amount.

In NBS Stiffness Tester, specimen is bent through a given angle and its stiffness measured by the torque in a wire suspension. By varying width and length of specimen and angle through which it is bent, and by using supporting wires of different sizes, instruments of this type can be used to cover a wide range of stiffness.

Device is designed to put a measured twist on specimen, which is supported in clamps at its two vertical edges. When torque frame is rotated, applied torque is transmitted by piano wires to bend the paper. Pointer attached to rotating clamp indicates angle through which paper is bent and torque applied to piano wire.

From torque value, bending angle, and dimensions of specimen, stiffness is calculated by a formula. The stiffness formula, developed for small bending angles, also gives rather consistent results for rather large angles.

Apparatus owes its sensitivity in considerable degree to design which eliminates need of bearings in torque measuring device. Another advantage of design is vertical bending axis, which makes measurement independent of gravity effects.

(For further details, see "The Stiffness of Paper," by F. T. Carson and Vernon Worthington, *Journal of Research NBS* for December 1952 or address inquiries to National Bureau of Standards, U. S. Dept. of Commerce, Washington 25, D. C.)

When inquiring check CP 7649 on handy form, pgs. 2-3



Remember — the trade marks "tt"  
and "TUBE-TURN" are applicable only  
to products of TUBE TURNS, INC.



tt  
**TUBE-TURN**  
TRADE MARKS

## Engineered FOR MINIMUM PRESSURE DROP

**T**HIS TUBE-TURN Welding Elbow has full radius conforming to A.S.A. Standard B 16.9. The radius is not reduced by tangents. The interior walls are consistently smooth and perfectly circular . . . important production features which minimize pressure drop.

This attention to engineering detail pays off in your piping systems. When you specify TUBE-TURN Welding Fittings and Flanges, pressure drop is at a minimum and uniformity of fit-up is assured.

You'll find a TUBE TURNS' Distributor in every principal city. Call him for good service in good connections.

Be sure you see the double "tt"

**TUBE TURNS, INC.** LOUISVILLE 1,  
KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles

Wholly owned subsidiaries: TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO

PENNSYLVANIA FORGE CORPORATION, PHILADELPHIA, PA. • KEROTEST MANUFACTURING COMPANY, PITTSBURGH, PA.



FOR MORE INFORMATION  
CONTACT THE JOB

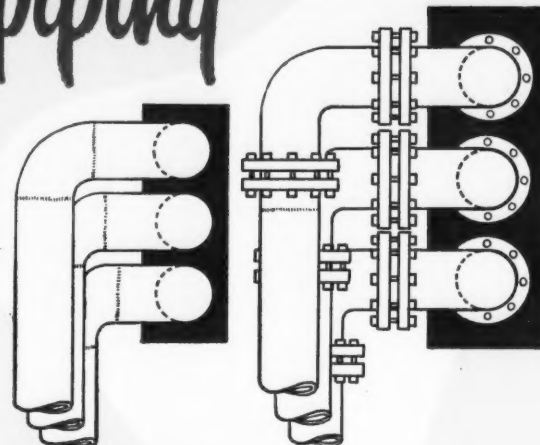
# COMPACT *Welded piping* SIMPLIFIES THE JOB

You can simplify design, save valuable space and speed up the piping job by specifying *welded construction* with Tube-Turn Welding Fittings. Welded joints are virtually flush with the pipe. Pipes can fit snugly together in tight corners . . . against wall or ceiling . . . or around equipment. And welded piping requires little elbow room to install . . . and to insulate. The true circularity and uniform wall thickness of Tube-Turn Welding Fittings simplifies fit-up and assures a job well done under crowded working conditions.

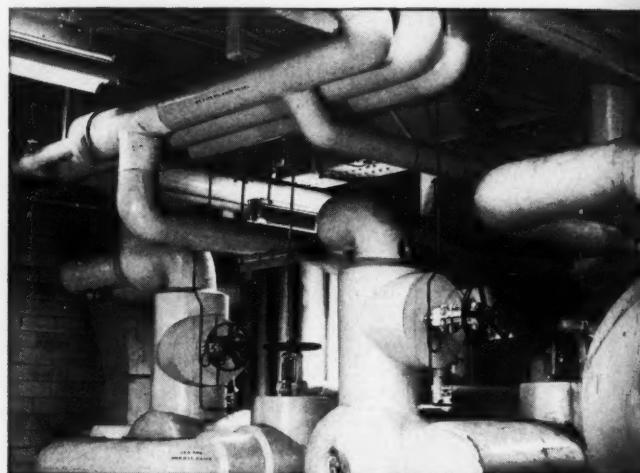
This is just one reason why it pays to specify *welded piping*. It's stronger, lighter, streamlined, economical to install, insulate and maintain.



Bring on your tight corners! Entire sections of welded piping can be shop-fabricated and erected as a unit with a few simple tie in welds or flange connections to valves or containers.



Example: The welded assembly on left takes a third less space than comparable flanged assembly.



In the new O. H. Hutchings Station of Dayton Power & Light Company. Piping for deaerators and feed water heaters is compact, streamlined and permanent. Directional changes are made with TUBE-TURN Welding Fittings.

## Want Dimension Data?

Tube Turns, Inc. has compiled a handy folder of charts covering dimensions and weights of TUBE-TURN Welding Fittings and Flanges. If you'd like a free copy just send this coupon.



**TUBE TURNS, INC., Dept. KK-2**  
224 East Broadway, Louisville 1, Kentucky

Your name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Nature of business \_\_\_\_\_  
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## DISTRICT OFFICES

New York	Houston
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"tt" and "TUBE-TURN"  
Reg. U.S. Pat. Off.

**TUBE TURNS, INC.**  
LOUISVILLE 1, KENTUCKY

# Surgical dressing is sprayed on wounds . . .

transparent covering permits visual inspection

US Air Force has developed a sprayed on, plastic surgical dressing, which may be applied to injured areas of the body by an aerosol-type, pressurized container. Tests indicate that this type of bandage may replace gauze dressing, which is characteristically cumbersome and must be resterilized periodically.

Transparent dressing, known as Aeroplast, permits wound to be inspected through the covering. Dressing is easy to remove and will not cling to injured tissue, since material adheres only to dry, healthy skin areas. Moreover, dressing can be applied to parts of the body which are poorly adapted to gauze dressing.

The modified vinyl plastic used in dressing is impermeable to bacteria, is elastic and flexible, and is stable in storage. Bandage is sprayed over affected area to a thickness of about 0.005 inch.

(Information received from Public Information Office, Headquarters Air Research & Development Command, Dept. CP, P. O. Box 1395, Baltimore 3, Md.)

# Gives pertinent info on antifreezes

Thirty-one-page bulletin deals with such questions as when antifreeze should be added, what strength should be used, and what kind of antifreeze is best suited to the service involved. Information is given concerning pertinent physical properties and service performance of the major categories of antifreezes.

To obtain "Automotive Antifreezes" remit 15 cents direct to U. S. Dept. of Commerce, Government Printing Office, Washington 25, D.C.

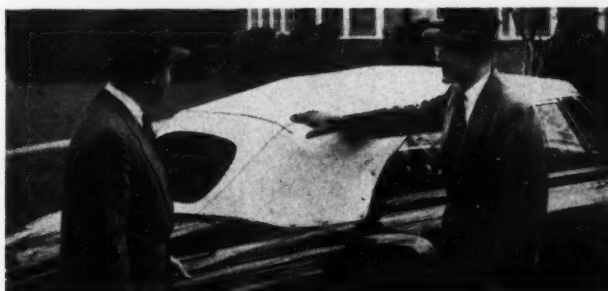
For more information on product advertised at right, specify CP 7651 . . . see information request blank between pages 2-3

For more information on product at left, specify CP 7652 . . . see information request blank between pages 2-3.

# THESE PROBLEMS WERE SOLVED BY ORLON

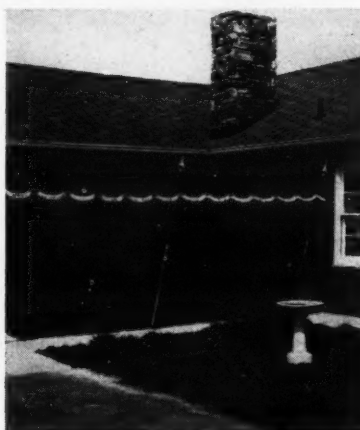
## -What can it do for you?

A maker of carbon black had a money-losing operation. Problem: To recover a new carbon black of very fine particle size. Too many particles escaped with usual dust-collecting methods. Ordinary filter bags were then tried. They developed holes from the acid fumes. Solution: Bags of acid-resistant "Orlon" acrylic fiber. They made it possible to recover carbon black that had previously been lost; made this process profitable.



An automobile maker wanted a long-lasting convertible top. In topping fabric of "Orlon," he found one that will keep its good looks for years. A top of "Orlon" is more resistant to the weakening effects of the sun's rays than any fabric top ever used before. It holds its shape better, stands up well after repeated raising and lowering, and is easy to clean.

An awning maker wanted to give his canvas goods more strength at the seams. What was needed was a sewing thread that could resist weakening by sun, stress, mildew and insects. Tough, weather-resistant sewing thread of "Orlon" solved the problem. It not only produced seams of greater strength, but it gave them better looks. "Orlon" is also being used in the manufacture of sails, where its shape-retaining and weather-resistant properties are extremely useful.



Battery workers' clothes were being eaten by acid. The work clothing at left was ruined in two weeks' time. That on the right has been in use four months, and is likely to be good for at least a year more of service. It withstands acid conditions because it is made of "Orlon." Uniforms of "Orlon" are popular, too, with service station operators, plant guards, and delivery men. Adding to the advantages found in work clothing, they offer easy launderability and press retention.

A filter-press operator had shutdown-time worries. Acids involved in wet filtration ruined his filter fabric in a very short time, and it was expensive and time-consuming to replace it. Then he installed a filtration cloth of "Orlon." It lasted 90 times longer than the cloth previously used. Only a fabric of "Orlon" could withstand the conditions of acid, heat, and unusual flexing involved in this process.



## HOW CAN YOU USE ORLON?

Your business, too, may benefit from the unique combination of properties found in "Orlon." Perhaps these case histories will suggest to you a new use for Du Pont "Orlon" acrylic fiber. If you have an idea for improving a product or production process with "Orlon," write E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Department, Room N-2522-P, Wilmington 98, Delaware.

**ORLON** is Du Pont's trade-mark for its acrylic fiber.  
REG. U. S. PAT. OFF.

Many textile mills make fabrics of "Orlon" acrylic fiber—made and supplied to them by Du Pont. Look for its extra values in more and more products for industry.



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY



**AEC manager answers questions  
on how industry can get into  
atomic work . . .**

comments delivered before engineering group in  
Chicago point out ways and means

In a talk given by Mr. Alfonso Tammaro, Manager, Chicago Operations Office, US Atomic Energy Commission, he anticipated the customary question-and-answer period by including in his own talk just such a discussion. His general topic was the industrial uses of atomic energy and dealt mainly with the production of power from a reactor heat source. In the question-and-answer part, Mr. Tammaro explained how interested industry might get into atomic energy work.

Part of this discussion follows:

**Q. What companies are eligible to work in the atomic energy program?**

**A.** Almost any type of industrial firm. For large specialized projects, a specific type of experience may be required, but many of the industrial services and products sold to AEC are those routinely sold by industry.

**Q. What should a company do to find out if there is business for it in the atomic energy program?**

**A.** Best thing is to inquire at the nearest Operations Office of the AEC. There are in the Commission eight Operations Offices: three are production centers of 235 and Pu; these are Oak Ridge, Savannah River and Hanford; New York Operations handles raw materials; Santa Fe is the military applications laboratory; Idaho is a reactor testing station; Schenectady, mobile reactor development; and Chicago handles practically all of the research and development work on mobile and stationary, research and power reactors and accelerators.

For specialized contracts, the Commission examines the qualifications of many companies. Therefore, it is imperative that the Commission be made aware of the abilities of interested concerns. Frequently one can learn about equipment and supply and other unique needs and about special engineering problems by contacting an Operations Office.

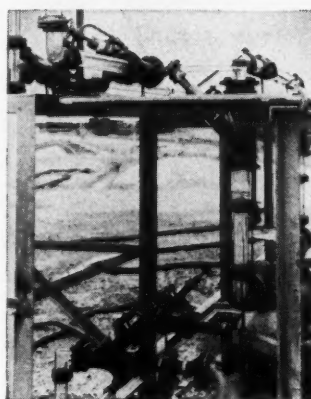
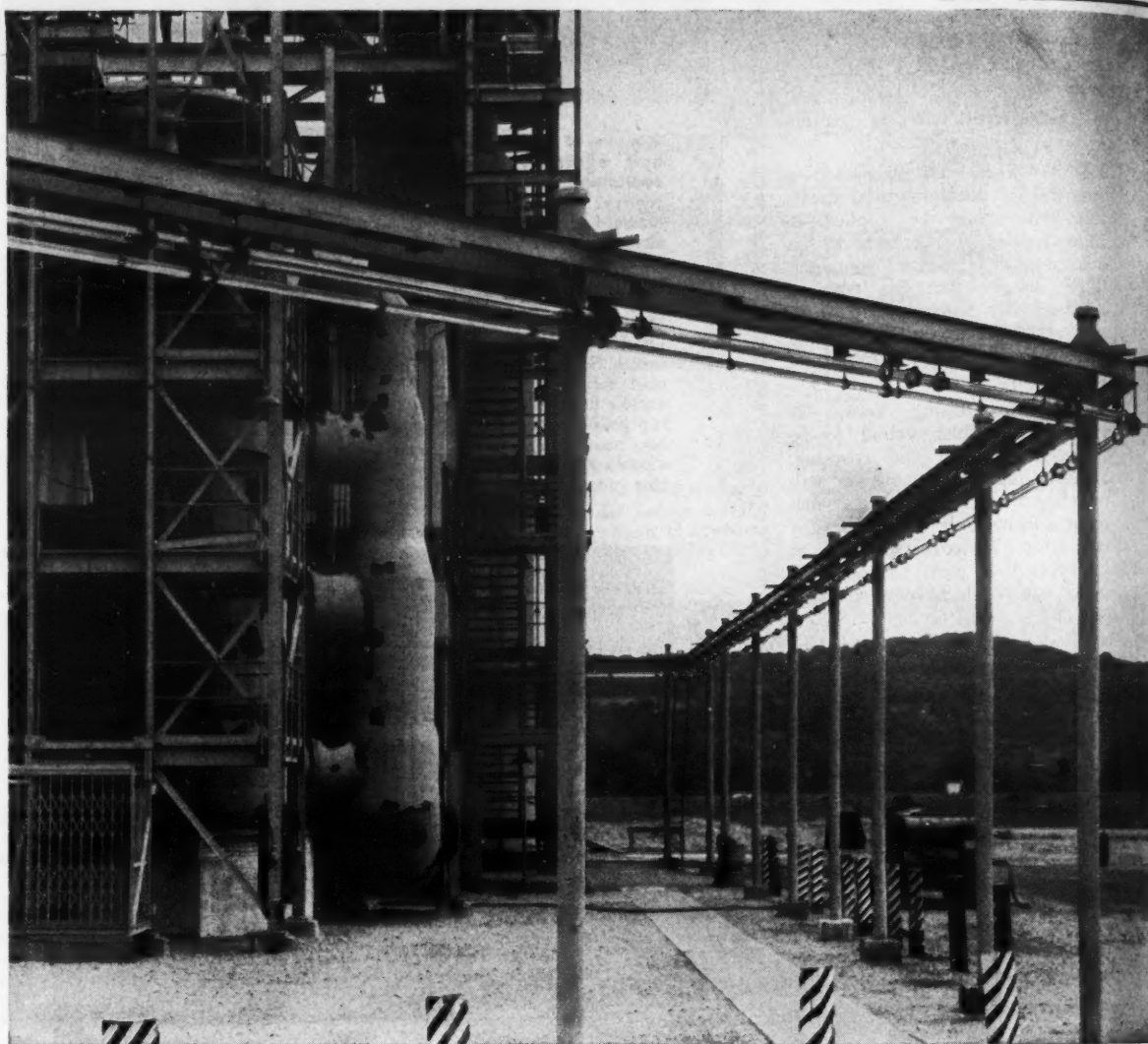
**Q. What about secrecy? Is it a barrier for uncleared companies wanting to work in the program?**

**A.** When it becomes necessary for the Commission to contract with an uncleared company to do classified work, which is often the case, it can arrange for prompt clearance of the company officials to carry out the preliminary classified discussions. This can be done and is done quite frequently to save time when it is imperative to move rapidly.

**Q. What opportunities are there for a company to do atomic energy work in its own industry apart from the Government program?**

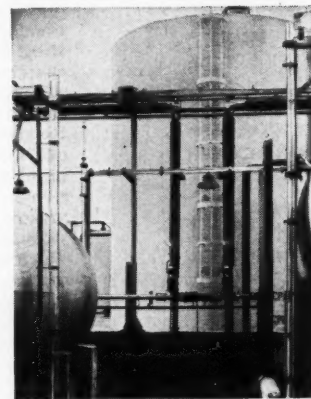
**A.** There are several possibilities. For instance, a number of companies have taken advantage of atomic energy development and have placed

## Acid corrosion of transfer lines no problem



**Transparent and easy to clean.** Transparency is one of the plus features. It permits plant men to keep an eye on the lines—note color deformity, impurities, clogging and other defects at a glance. Trouble can't hide behind glass.

Still another, is easy cleaning. The hard, smooth surface of PYREX pipe minimizes solids adherence, eliminates grooves and depressions where material might gather.



**Resists thermal shock and weathering.** Low expansion coefficient of PYREX brand glass No. 7740 gives PYREX pipe exceptional thermal resistance. Rapid shocks of 150° F. and more leave the lines unharmed. Hot acids can be run in cold weather. Chemical stability assures resistance to sunlight and moisture.



### CORNING GLASS WORKS

CHEMICAL PROCESSING

at **BAKELITE'S\*** Marietta plant

# PYREX® brand "DOUBLE - TOUGH" GLASS PIPE is in the picture

In selecting a piping material for transferring acids at its Marietta, Ohio plant, Bakelite Company took several points into consideration. First cost was important. So was service life. This meant a piping material which would provide utmost resistance to acids day-after-day, year-after-year. Resistance to thermal shock and weathering was also important because the pipe was to be used outside in a climate known for its temperature extremes.

You can see how Bakelite solved its problems... with PYREX brand "Double-Tough" glass pipe. Not only was PYREX pipe low in first cost, extremely high in chemical and thermal resistance, but it offered several important extras, including transparency, easy cleaning, light weight and simple installation, together with exceptional mechanical strength.

\*A Division of Union Carbide and Carbon Corporation

Whether you are handling hot or cold concentrated acids (except hydrofluoric), mild alkalis or pharmaceuticals, you'll find PYREX pipe the safest and most economical material that you can use.

## Readily available in many sizes

It is readily available in the following sizes—1", 1½", 2", 3", 4" and 6" inside diameters. A complete line of fittings including ells, tees, crosses, reducers, adapters, laterals, return bends and caps may be had. Glass plug valves are available in 1" and 1½" sizes. There are a wide variety of gaskets now in stock to resist virtually every chemical known. Light weight permits easy, economical installation with long lines. Your own plant help can do this job.

## These PYREX brand glass pipe distributors stock the complete line:

ALBANY 5, NEW YORK  
A. J. Eckert Company

ATLANTA, GEORGIA  
Southern Scientific Company

BELMONT, CALIFORNIA  
Glass Engineering Laboratories

CAMBRIDGE 39, MASS.  
Macalaster Bicknell Company

CHICAGO 44, ILLINOIS  
Fred S. Hickey, Inc.

FRESNO 17, CALIFORNIA  
Valley Fdy. & Mach. Works

HATBORO, PENNSYLVANIA  
Sentinel Glass Company

ROCHESTER 3, NEW YORK  
Will Corporation

HOUSTON 7, TEXAS  
W. H. Curtin & Company

PITTSBURGH 19, PA.  
Fisher Scientific Company

MONTREAL 3, QUEBEC, CAN.  
Fisher Scientific Company, Ltd.

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Scientific Supplies

ST. LOUIS 2, MISSOURI  
Stemmerich Supply Inc.

LODI, NEW JERSEY  
Mooney Brothers Corporation

BUFFALO 13, NEW YORK  
Buffalo Apparatus Corp.

NEW HAVEN, CONNECTICUT  
Macalaster Bicknell Company

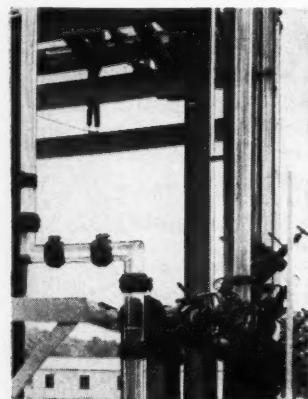
NEW ORLEANS, LOUISIANA  
W. H. Curtin & Company

TORONTO, ONTARIO, CAN.  
Fisher Scientific Co., Ltd.

VANCOUVER, B. C.  
Scientific Supplies

## PYREX brand "DOUBLE-TOUGH" Glass Pipe for drainage lines.

A relatively new and rapidly spreading application for PYREX brand "DOUBLE-TOUGH" glass pipe is in draining corrosive wastes. Many plants have realized substantial savings because PYREX pipe virtually eliminates replacement problems. Then too, installation costs are lower because PYREX pipe does not require burial in concrete, and safety is greatly improved. Complete fittings (including sink traps) are available.



Mechanically strong. There's no need to worry about mechanical damage to PYREX pipe. First, it has proven over 25 years that it can take a beating. Second, ends and fittings (except U-bends) are tempered to double their strength. Third, plant men realize that it is glass and treat it with respect.

Corning, N. Y.

*Corning means research in Glass*

When inquiring check CP 7653 on handy form, pgs. 2-3

## CORNING GLASS WORKS

Dept. CP-2, Corning, N. Y.

Please send me the printed information checked below:

- ☐ "PYREX brand Glass Pipe in the Process Industries" (EA-1)
- ☐ "PYREX brand "Double-Tough" Glass Pipe and Fittings" (EA-3)
- ☐ "Plant Equipment Glassware for Process Industries" (EB-1)
- ☐ "Installation Manual" for PYREX brand "Double-Tough" Glass Pipe (PE-3)
- ☐ "PYREX Cascade Coolers" (PE-8)

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_  
Zone \_\_\_\_\_ State \_\_\_\_\_

various devices on the market such as: electro-magnetic pumps and flow gages for handling liquid metals, and a small cell which produces accurate voltages, since it is possible to generate small quantities of electricity directly from nuclear radiation.

Then there is the work with, or related to, radioisotopes, and nuclear reactor technology. Many companies are already putting radioactive materials to use in their own work, such as radioactive cobalt, which is produced in nuclear reactors in increasing quantities. It is a substitute for radium in industrial radiography where its penetrating gamma radiation is used to detect flaws in metal casting and welds, studies in engine wear and lubrication by radio tracer techniques.

**Q. How can a company keep abreast of the work in the field of nuclear energy or train a man, if possible?**

**A.** There are several ways: First, a man may be assigned the task of keeping abreast of the literature now being published in this field. A request to the Technical Information Service will bring information on how this may be done.

Second, a bright young engineer or scientist may be farmed out for a one or two year period to one of the Commission's organizations carrying out research, development and construction of reactors.

Third, an engineer or scientist may be sent to the Oak Ridge School of Reactor Technology to take a one-year course in practically all aspects of reactor technology. Requirements are high and it is recommended exceptionally well-qualified candidates be selected.

Fourth, a man can be sent to Oak Ridge for a four-week course in radioisotope techniques by the Oak Ridge Institute of Nuclear Studies.

(From a talk "Industrial Applications of Nuclear Energy" given by Mr. Tammara before the American Society of Mechanical Engineers, Chicago, Illinois.)

## Purified coenzyme-A available in research quantities...

now being produced from brewers' yeast in a highly purified form

Coenzyme-A, a rare biochemical to which scientists attribute an important role in all living animal tissues, is now being produced from brewers' yeast in quantities for research purposes. This coenzyme was previously obtainable in only minute laboratory amounts. In what is the first commercial process for its manufacture, the coenzyme is dried by a freeze-drying process known as "lyophilization" and is packaged in the form of a white fluffy powder.

(Announced by Pabst Laboratories, Division of Pabst Brewing Co., Dept. CP, 1037 W. McKinley St., Milwaukee 3, Wis. . . . or for more information check CP 7654 on handy form, pages 2 and 3.)



# AMMUNITION

for an  
IDEA MAN



Photomicrograph of Nalcite HCR



## ION EXCHANGE MATERIALS

**NALCO** Ion Exchange Materials are excellent ammunition for an idea man looking for process shortcuts. Metal and

acid removal or recovery, purification, softening or demineralization processes can make full use of the modern techniques possible with these stable, uniform products . . .

### Nalcite HCR — CATION EXCHANGE RESIN

- Styrene type, spherical form • Capacities of 30,000 grains per cubic foot, and higher • Full operating efficiency at temperatures to 250°F. • Either salt or acid regeneration
- Efficient performance over the entire pH range

### Nalcite SAR — STRONGLY BASIC ANION EXCHANGE RESIN

- Removes all acids, including carbonic and silicic • Spherical particles, 99% retained on 20 to 40 mesh screens • Insoluble in water, aromatic and aliphatic hydrocarbons, non-oxidizing acids and bases • pH operating range from 2.0 to 10.0

### Nalcite WBR — WEAKLY BASIC ANION EXCHANGE RESIN

- High-capacity removal of stronger acids • Polyamine-polystyrene resin in spherical form • High chemical stability

Write for full technical data on Nalcite Resins

### NATIONAL ALUMINATE CORPORATION

6294 West 66th Place Chicago 38, Illinois  
Canadian inquiries should be addressed to Alchem Limited,  
Burlington, Ontario



**PRODUCT . . .** When you use Nalcite resins, you take advantage of Nalco's long and broad experience in water and process technology.

When inquiring check CP 7655 on handy form, pgs. 2-3

## IDEAS

### Warning note is sounded on sulfur shortage

Current wave of optimism which permeates various sulfur stories doesn't seem to jibe with recent data in Bureau of Mines' Report S No. 114. This optimism should be replaced by cautiousness and conservatism on the part of the sulfur industry in line with the Dec. 22, 1952 statement of IMC, world sulfur regulatory body, that "the improvement in the supply position might be only a temporary matter."

Primary purpose of sulfur controls was to raise our inventory to safe working levels for national security. Low point in inventory was 2,665,801 gross tons of Frasch sulfur (Aug. 1951); high point was 3,081,284 gross tons (Sept. 1952) amounting to an increase of about 315,000 tons. From this high point our sulfur inventory has dropped to 3,064,952 tons, a decrease of about 16,000 tons. Inventory of recovered sulfur, not included in above figures, has dropped consistently in the Jan. 1952 to Oct. 1952 period from 96,813 to 74,899 gross tons.

It is reported that if seasonal Frasch production patterns continue as they have in the past, the decline in Frasch process sulfur inventory will be greater during the coming few months. This statement is made after having given consideration to the announcement of a new over-water operation started in Oct. 1952 (current rate about 78 tons per day) and also to the gradual decline in production of one smaller Frasch producer.

With 1952 production of Frasch sulfur estimated at 5,541,000 gross tons, consumption at current rates would consume our inventory in about seven months, if production of only two of the leading sulfur producers was stopped.

(Reported through cooperation of S. Schwartz & Associates, Consulting Engineers, Dept. CP. 165 Broadway, New York 6, N. Y.)

### Symbol-bearing tape simplifies planning plant layout . . .

can be stripped off without losing adhesive quality

No re-drawing or erasing is necessary when drafting plant layouts if manufacturer's symbol-bearing tape is used. Pressure sensitive tape



- \* in initial cost
- \* in heating and cooling time
- \* in tank space
- \* in maintenance labor

Each member of your buying committee should have this book which tells how Platecoils satisfactorily solve tank heating and cooling problems . . . and at the same time save time, money and manpower.

## PLATECOIL REPLACES PIPE COILS

Write for your free copy of Bulletin P54 today!

KOLD-HOLD MANUFACTURING CO., LANSING 4, MICH.

When inquiring check CP 7656 on handy form, pgs. 2-3

## PICCOLYTE

the VERSATILE resin

The ideal base  
for a wide  
variety  
of products

because Piccolyte is

- \* neutral
- \* pale
- \* non-yellowing
- \* readily soluble
- \* compatible
- \* resistant to acids and alkalis
- \* **Low in Cost**

Write for samples and full details



**PENNSYLVANIA**  
INDUSTRIAL CHEMICAL CORP.  
CLAIRTON, PENNSYLVANIA

Plants at Clairton, Pa., West Elizabeth, Pa., and Chester, Pa.  
Distributed by Pennsylvania Folk Chemical Co., Pittsburgh 30, Pa.  
and Harwick Standard Chemical Co., Akron 5, Ohio

When inquiring check CP 7657 on handy form, pgs. 2-3

CHEMICAL PROCESSING



## LOOK AT THESE PROPERTIES OF

### DUPONT "TEFLON"

...a combination of chemical, thermal, electrical and mechanical properties available in no other single material

Tensile strength (77°F.)	1500-2500 lb./sq. in.
Elongation (77°F.)	100-200%
Impact strength (Izod)	70°F., 2 ft.-lb./in. 77°F., 4 ft.-lb./in.
Service temperature	up to 500°F.
Power factor (60 to 10 <sup>6</sup> cycles)	<0.005
Temperature stability of dielectric properties	excellent
Water absorption	0.0
Resistance to chemicals	excellent (inert to all chemicals except molten alkali metals and fluorine under extreme conditions.)

The Du Pont Polychemicals Department supplies "Teflon" in the forms of molding powder and aqueous dispersions. We'll gladly suggest names of suppliers of sheets, rods, tubes, and finished parts. For full information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department; District Offices: 350 Fifth Avenue, New York 1, N. Y.; 7 S. Dearborn Street, Chicago 3, Ill.; 845 E. 60th Street, Los Angeles 1, California.

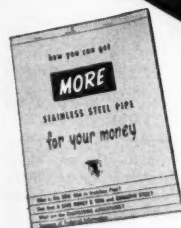


\*Trademark for Du Pont tetrafluorethylene resin

BETTER THINGS FOR BETTER LIVING  
... THROUGH CHEMISTRY

When inquiring check CP 7658 on handy form, pgs. 2-3

money-saving ideas



### ABOUT Carpenter STAINLESS PIPE

These data sheets tell you how to SAVE MONEY (up to 50%) and conserve Stainless Steel by getting the facts about this newest of Stainless Pipe schedules.

To find out how Schedule 5 gives improved flow conditions at less cost, just drop us a line or return the coupon below. We will gladly put your Schedule 5 Data Sheets in the mail.

#### —THE CARPENTER STEEL COMPANY—

Alloy Tube Division, Union, N. J.

Please send me a copy of the Carpenter Stainless Tubing Data Book.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_  
(Please Print)

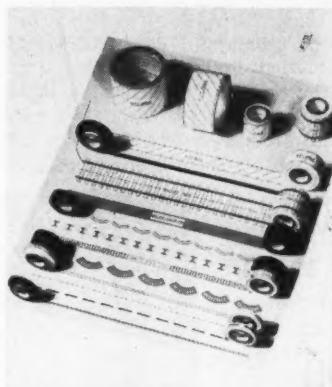
COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_  
(Firm name and title must be on coupon)

When inquiring check CP 7659 on handy form, pgs. 2-3

## IDEAS



Typical examples of symbol-bearing Labelon tape

can be stripped off repeatedly without leaving a mark or losing adhesive quality. Tedious initial drawing of repetitive symbols is eliminated and changes in temporary layouts can be made quickly.

In addition to reducing time needed for preparing new layout plans, use of tape also encourages re-layout of facilities for greater productive capacity.

All standard symbols for walls, aisles, conveyors, columns, shafts, railroad tracks, material and process flow, etc. are available in 324 or 648" rolls. Present scale is 1/4" to one foot, but scale of 1/8" to one foot will soon be available. Opaque type tape is intended for photo-copying use; transparent type for reproduction on standard ammonia vapor machines.

It is reported that the acetate tape retains its adhesive and high tensile strength characteristics during prolonged storage or shipping. Representative selection of 15 symbols and 20 different rolls may be obtained in kit form, including specially designed knife with instructions. Complete list of 45 symbols, colors, and types is also available.

(Product of Labelon Tape Co., Inc., Dept. CP, 450 Atlantic Ave., Rochester 9, N. Y. . . . or for more information check CP 7660 on handy form, pages 2 and 3.)

PROCESSING & ENGINEERING  
DATA Section

on pages 190, 192, 194, & 196

FA\*  
Information Series No. 1

## Low Cost; Thermosetting; Corrosion Resistant Resins

Quaker Oats manufactures furfuryl alcohol, but does not make furfuryl alcohol resins.

1. Low Cost permits wide applications in present liquid resin markets. Though they are competitive in cost and have many of the properties of phenoplasts and aminoplasts, furfuryl alcohol resins give extra value in that they are more inert to chemical attack.

2. Thermosetting assures resistance to distortion at high temperatures (360° F.) in dry or wet applications.

3. Corrosion resistant means essentially no attack or disintegration by weak or strong alkalis, acids and solvents or combinations thereof at room temperatures or at elevated temperatures.

Numerous firms specializing in the construction of corrosion resistant installations and equipment, employ furfuryl alcohol type resins. The resins themselves are available from prominent resin manufacturers for your consideration in liquid resin applications. We also invite you to consider furfuryl alcohol type resins for your general binder requirements. Send for bulletin 83-C on furfuryl alcohol.

\*Reg. U. S. Pat. Off.



The Quaker Oats Company

CHEMICALS DEPT.

336M The Merchandise Mart, Chicago 54, Illinois  
Room 536M, 120 Wall St., New York 5, N. Y.  
Room 436M, P. O. Box 4376, Portland 8, Oregon

In San Francisco: The Griffin Chemical Company • In Europe: Quaker Oats-Grainproducts N. V., Rotterdam. The Netherlands: Quaker Oats (France) S. A., 3, Rue Pillet-Will, Paris IX, France  
In Australia: Swift & Company, Pty., Ltd., Sydney • In Japan: F. Kanematsu & Co., Ltd., Tokyo

When inquiring check CP 7661 on handy form, pgs. 2-3

**Requires sample of only 0.5 ml  
to indicate viscosities  
of 0.1 to 100,000 cp...**

electro-mechanical resonance is induced in probe at about 800 cycles per second

A vibrating plate viscometer is in the development stage at RCA Laboratories in Princeton, N. J. It measures viscosities of liquids like acetone and can also be used on heavy cup grease. Total range of the instrument is 0.1 cp to 100,000 cp. Actual reading, however, is a product of viscosity and density in the liquid.

Probe houses vibrator equipment and has a tiny circular blade (0.010-inch thick, 0.200-inch in diameter) which can be inserted to take a viscosity measurement in a sample as small as half a milliliter. Resonant vibration, at a frequency near 800 cycles per second, is attained by piezo-electric crystals in the probe and a novel "frequency finding" electronic circuit. Voltage generated by the piezo crystals is measured to find viscosity x density.

For most common fluids, operation is satisfactory and accuracy is about plus or minus 5%. Thixotropic suspensions however, give a decreasing reading with time — probably because of blade's motion through the material.

Plans for a commercial instrument of this type have not been announced by RCA, though two other instrument companies are reported to be preparing to market one.

(Information supplied by Dr. J. G. Woodward of RCA Laboratories, Div., Radio Corporation of America, Dept. CP, Princeton, N. J.)

**Study shows effect of cleaning  
on paints employed as  
H<sub>2</sub>O-vapor barriers...**

cleaning consisted of washing operations using three types of detergents

In tests conducted by the National Bureau of Standards, a study was made of what cleaning would do to the water-vapor barrier effectiveness of paints. An evaluation of three types of cleaning compounds and six types of interior paints (conforming to applicable federal specifications) was carried out by Edward R. Oglio and William C. Cullen of NBS in cooperation with the Housing and Home Finance Agency.

Paints included a white gloss enamel, an interior white gloss enamel, an interior white semi-gloss enamel, an interior one-coat flat white oil paint, a ready-mixed white flat oil paint, and an interior resin-emulsion paint. The "dry-cup" method, usually used for testing water-vapor barrier resistance of vapor-barrier paints, was employed.

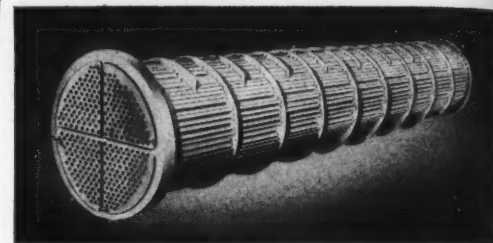
Resin-emulsion paint and one-coat flat oil paint did not qualify as vapor barriers because they exceeded the limit (water-vapor permeance of less than 1 grain per sq ft per hr per inch of mercury-pressure differential). They were not given the cleaning tests.

Apparatus used in washing and scrubbing consisted

Cut cost  
and  
corrosion  
in the process  
with

**ALCOA  
ALUMINUM**

- Heat Exchanger Tubes
- Pipe
- Storage Tanks
- Tank Cars



**ALCOA ALUMINUM HEAT EXCHANGER TUBES**

Check these BIG Heat Exchanger Tube savings:

**Fabrication...** Their ductility makes them easy to roll in and bend.

**Shipping and handling...** Completed bundles weigh far less than bundles of heavy metal tubes.

**Cleaning...** Require far less cleaning than Admiralty tubes in furfural service. Aluminum does not catalytically polymerize furfural.

**Low Temperature Service...** Strength actually increases as temperatures drop to -320° F and below.

**Original Cost...** Alcoa Aluminum Tubes cost 1/2 less than Admiralty, 1/3 less than Mild Steel, 1/5 as much as Stainless. An average-sized refinery can save \$50,000 in first cost by using Alcoa Aluminum Tubes (figured on 20,000 tubes) as this chart shows:

	PRICE PER 16 FOOT LONG TUBE			
	¾" O.D. x .049" wall	¾" O.D. x .049" wall	¾" O.D. x .065" wall	1" O.D. x .065" wall
3S-H14	\$1.17	\$1.33	\$1.62	\$2.09
Alclad 3S-H14	1.49	1.73	2.04	2.69
Seamless Mild Steel	2.68	2.82	3.18	3.49
Admiralty Brass	2.95	3.53	4.39	6.10
Cupro Nickel (30%)	4.42	5.30	6.78	9.19
Stainless Steel (304)	8.61	9.67	11.38	13.73

Note: All prices are approximate. Prices for 3S-H14 and Alclad 3S-H14 based on lots of 2000-4999 lbs., for Admiralty and Cupro Nickel 5000 to 9999 lbs. Prices for Mild Steel and Stainless based on lots of 10,000 ft. with exception of size 1" O.D. x .065" wall which is based on 5000 ft.

Use Alcoa Alclad 3S-H14 Heat Exchanger Tubes with fresh, brackish and salt cooling waters.



## Check These Heat Exchanger Tube Uses:

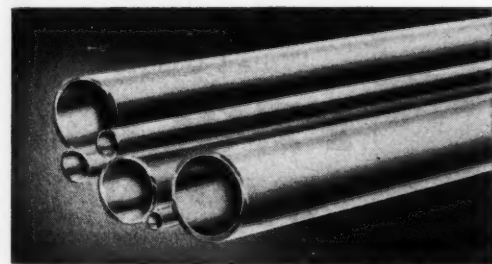
### PETROLEUM

Amine solution coolers  
 Jacket water coolers  
 Condensers handling hydrocarbon fractions from such processes as Thermal and Catalytic cracking, reforming, polymerizing, etc.  
 Furfural condensers and heat exchangers  
 Glycol-amine heat exchangers and reboilers  
 Hydrogen sulfide gas coolers  
 Lean oil—rich oil exchangers  
 Lube oil coolers  
 Natural gas compressor aftercoolers  
 Propane chilling  
 Recompressor aftercoolers  
 Vapor recovery condensers  
 Wax sweaters

### CHEMICAL

Acetaldehyde  
 Acetanilide  
 Acetic acid  
 Ammonia  
 Benzene  
 Butanol  
 Butyric acid  
 Dichlorobenzene  
 Ethanol  
 Ethylene Glycol  
 Formaldehyde  
 Furfural  
 Gelatin  
 Glycerin  
 Hydroabietyl alcohol  
 Hydrogen Cyanide  
 Hydrogen Peroxide  
 Isopropanol  
 Methanol  
 Naptha  
 Nitric acid (concentrated)  
 Phenol  
 Propylene Glycol  
 Pyridine  
 Ricinoleic acid  
 Stearic, Palmitic, Maleic  
 Oleic acids  
 Turpentine  
 Xylene  
 and many others

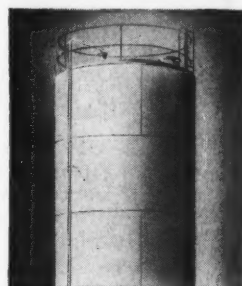
Alcoa pioneered aluminum heat exchanger tubes 44 years ago. Write for details and the booklet: *Alcoa Aluminum Heat Exchanger Tubes*.



### ALCOA ALUMINUM PIPE

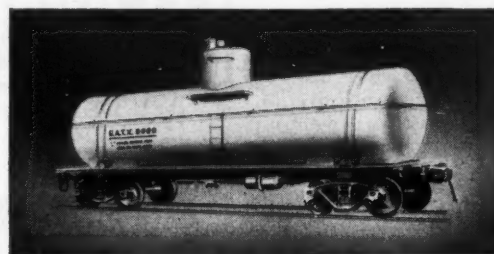
Aluminum, of course, is highly resistant to attack by sour crude and most sulphur compounds . . . protects the quality of high-grade resin and other naval stores. It can be joined by every fusion process . . . is easier to handle and install because it weighs 1/3 as much as other materials. Its chemical

inertness and corrosion resistance avoid batch and process contamination. High thermal conductivity and ductility speed filling of vessels with cold liquids. You get all these cost-cutting qualities when you use Alcoa Pipe in the processing field. Write for the booklet: *Alcoa Aluminum Pipe*.



### ALCOA ALUMINUM STORAGE TANKS

For over 20 years Alcoa Aluminum has been in continuous service handling fatty acids in storage tanks. Aluminum protects the stability and color of essential oils, edible oils, fats, glycerine . . . resists the corrosive effects of sulphur . . . does not stain or discolor products handled . . . is non-toxic . . . inert to many chemicals . . . nonsparking. Write for the pamphlet: *Alcoa Aluminum in the Process Industries*.



### ALCOA ALUMINUM TANK CARS

The first tank car of Alcoa Aluminum, in service since 1928, still hauls fatty acids . . . proof that aluminum resists corrosion, gives lasting service, doesn't contaminate its cargo. Leading shippers everywhere report: No damage to ladings . . . no damage to cars, when valuable liquids are delivered in Alcoa Aluminum Tank Cars. Ask your car builder about the advantages of lightweight aluminum rolling stock, or write to Alcoa.

ALUMINUM COMPANY OF AMERICA  
 902-B Alcoa Building, Pittsburgh 19, Pa.

**Alcoa**  
**Aluminum**  
 ALUMINUM COMPANY OF AMERICA

For process chemicals—catalysts, catalyst carriers and desiccants—investigate ALCOA Chemicals

When inquiring check CP 7662 on handy form, pgs. 2-3

of two vertical motor-driven shafts, one above and off-center from the other. Test specimen was attached to the lower shaft and rotated at 50 rpm, while the scrubber, attached to the upper shaft, was rotated at 100 rpm in the same direction. A 1-lb load was applied between the two shafts.

Test specimens were soiled with a one-inch-wide brush coat of a standard soil and cleaned after drying overnight. Cleaning operations consisted of combinations of washing operations using three types of detergents, with a cellulose sponge and a bristle brush as the scrubbers. Water-vapor transmission of each of the four paints was measured both before and after each cleaning procedure (six in all).

Washing and scrubbing tests did not cause any appreciable increase in water-vapor permeance of the gloss enamel and the semi-gloss enamel paints. This was true even when the film lost as much as 25% in thickness by abrasion during the cleaning.

Synthetic gloss enamel exhibited no increase in permeance during five of the six cleaning procedures. In an operation employing scouring powder and brush, water-vapor permeance increased about 25%. Similarly, the flat paint showed an increase in permeance during only one operation, that using a paint cleaner and bristle brush. This paint was abraded severely during the latter test.

The NBS tests indicate that water-vapor permeance of conventional types of interior paints (enamels and flat paints) is not affected appreciably by cleaning, regardless of type of detergent employed, provided a soft cleaning implement such as a cloth or a sponge is used. However, some increase in water-vapor transmission may occur after repeated cleanings if a harsh implement such as a stiff-bristled brush is used.

(National Bureau of Standards, Technical News Bulletin, Vol. 36, No. 5, May 1952).

### A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

### Plastic resists corrosive action of flowing HCl to protect workers—equipment

Rubber-lined, steel pipe used to convey corrosive hydrochloric acid from tank cars into plant to fill glass containers, presented a serious problem for a chemical warehouse. Corrosive action of acid disintegrated pipe; and acid leaked through resulting openings. Danger to workmen and equipment around or under piping became apparent. Installation of plastic Carlon "E" pipe solved problem, inasmuch as it is compounded of materials capable of withstanding both concentrated and dilute solutions of this acid without deterioration or leakage.

(Carlon pipe is produced by Carlon Products Corp., Dept. CP, 10225 Meech Ave., Cleveland 5, Ohio.)



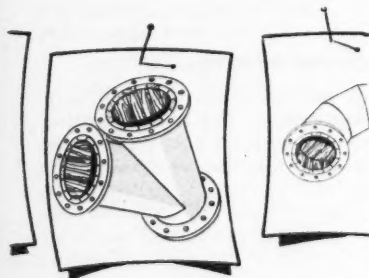


and it's as  
easy as **MPC!**

**MPC Wood-Lined Steel Pipe** is the efficient and economical answer wherever corrosion, abrasion, frictional resistance or sliming is a problem.

Ideal for corrosive liquids, gases and fumes including aggressive waters, industrial waste liquors, pulps, slurries, acid, alkali and salt solutions.

For service up to 180° F. and 250 p.s.i. Higher pressure ratings for special service requirements. All pipe flanged and available in 10' and 20' standard lengths or "tailor-made" to your specifications. Easy to cut and re-flange. All flanges have standard ASME bolt circle.



Woodlined fittings are available in standard and special designs for all diameters. For catalog and additional information write Dept. CP.



**MICHIGAN PIPE COMPANY**  
Bay City • Michigan

Manufacturers of Wood-Store, Saran Rubber-Lined, Stainless Steel and Monel Piping. Represented nationally by Saran Lined Pipe Co. Detroit, (Ferndale) Michigan.

When inquiring check CP 7663 on handy form, pgs. 2-3

## IDEAS

**Valve diaphragm life is extended from two days to nine months with thermoplastic . . .**

corrosion-resistant fluorocarbon material useful also as plasticizer and in coatings

Extended life of valve serviceability — from two days to nine months — in handling a highly corrosive chloride material through use of a fluorocarbon type of thermoplastic as the valve diaphragm has been reported.

The material, known as Kel-F, is also reported valuable in handling oils, greases, and waxes, and can be applied in dispersions for protective coatings. Chemical industry has always had a problem with valves used in handling corrosive materials in making packing glands tight and having a positive shutoff. Packing problem has been solved in many applications by use of diaphragms that prevent corrosive materials from contacting packing area. Examples are diaphragm valves made by Crane Company and Saunders type valves made by Grinnell Company and Hills-McCanna. Latter type valve not only uses diaphragm to solve packing problem, but also uses diaphragm as closing medium.

In many applications where this type of valve is used, various flexible materials have been employed, type of material being determined by particular service. Formerly, no satisfactory diaphragm material was available for many corrosive systems. Kel-F molding powder, plasticized with same substance of low molecular weight, was reported to be a satisfactory diaphragm material from a mechanical standpoint. Plasticization was required to make plastic able to stand flexing necessary for this service. This diaphragm answered handling problem for many corrosives.

Having high resistance to chemical action of acids and other corrosives, the plastic is useful in form of oil, greases, and waxes. For these uses material has excellent temperature resistance and good lubricating properties. It is used in form of oil to plasticize molding powders of same material. Coatings made from dispersions of the plastic are chemically resistant, have good heat stability, and are clear in thin films. Plastic has solved a number of other similar problems in sheet, rod, and tube form.

(Courtesy of M. W. Kellogg Co., Dept. CP, P. O. Box 469, Jersey City 3, N. J.)

**Hazardous conditions eliminated by use of treated wool felt for filtering dust . . .**

felt also used for reclamation and other special applications in many fields

Use of wool felt for filtration is by no means confined to separation of solids from liquids. One interesting application is that in which material is used in a respirator for protection of workers against silicosis and other dangerous dusts. Wool has proven to be valuable in entrapment of particles in other dust problems as



**Check advantages of EL DORADO methyl esters**

**ECONOMY** — prices below those of corresponding fatty acids.

**EASE OF HANDLING** — Melting points 30° to 60° C. below corresponding fatty acids give easy measurement and transfer.

May be shipped, stored and used for most reactions without stainless equipment.

Write Dept. P for samples and information.

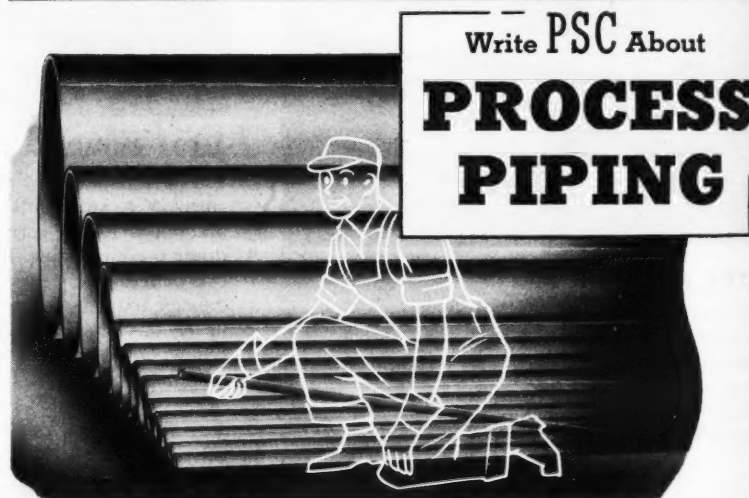
Products	Purity
<b>METHYL ESTERS</b>	
Caproate . . . . .	90% or better
Caprylate . . . . .	94% or better
Caprate . . . . .	92% or better
Laurate . . . . .	95% or better
Myristate . . . . .	94% or better
Palmitate . . . . .	70% or better
Also methyl ester of coconut fatty acid.	
<b>FATTY ACIDS</b>	
Caprylic . . . . .	93% or better
Capric . . . . .	92% or better
Lauric . . . . .	94% or better
Myristic . . . . .	92% or better
Palmitic . . . . .	70-75%

★

**EL DORADO**  
SINCE 1892  
**OIL WORKS**

MAIN OFFICE: 311 California St.  
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PLANTS: Oakland, California  
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When inquiring check CP 7664 on handy form, pgs. 2-3



**Fabricated from Complete Range of Alloys, Any Diameter Up to 60", and in Any Shape**

PSC welded process tubing is furnished in any alloy whatsoever. This feature accounts for its wide application in meeting the unlimited variety of heat, corrosion, oxidation conditions in process plants.

Any diameter up to 60"; wall thicknesses to 3/8"; temperatures to 2200°. Precision fabrication of tubing assemblies is a specialty. Send b/p or write as to your needs.

**THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.**



**Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints**

When inquiring check CP 7665 on handy form, pgs. 2-3

CHEMICAL PROCESSING

# CLEAN SEPARATION— between vapor and liquid



## when YORKMESH Demisters

are installed in:

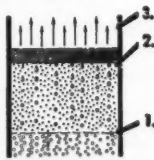
VACUUM TOWERS  
DISTILLATION EQUIPMENT  
GAS ABSORBERS  
SCRUBBERS  
SEPARATORS  
EVAPORATORS  
KNOCK-OUT DRUMS, ETC.

YORKMESH Demisters (entrainment separators—mist eliminators) have proved to be the answer to higher production and improved products when installed in new or existing equipment.

YORKMESH Demisters (made of finely woven wire) remove substantially all liquid entrainment even at increased vapor velocities. The net result: More production with higher quality.

### How YORKMESH Demisters work:

1. Vapor disengaging from liquid creates fine liquid droplets.
2. The liquid droplets impinge and coalesce into large drops and fall off.
3. The vapor is now dry, entirely freed from entrained liquid.



Materials: Types 430, 304, 316 Stainless Steel, Monel, Carbon Steel, etc. Prompt shipment.



When inquiring check CP 7666 on handy form, pgs. 2-3

FEBRUARY, 1953

## IDEAS

well as for reclaiming costly ingredients. Wool felt bags are used for filtration in a wide variety of fields.

The respirator employs wool that has been impregnated with solvent solutions of rosins or resinous materials. Minute dust particles are electrostatically or physically attracted by the wool felt treated in this manner. Another similar application is that in which the American Optical Company and the Pulmosan Company designed a dust filter. This unit has a chemically treated highly porous felt pad which removes poisonous particles less than 24 millionths of an inch in diameter.

In some commercial installations of felt filters, object is to improve working conditions and also to reclaim costly ingredients. One of outstanding units for this purpose is filter consisting of wool felt bag and outside blow-back ring for cleaning cake which forms on inside of bag. This filter is coming into use in pulverizing plants, paint, paper, and similar chemical installations.

Where felt is preferred filtering medium, its selection is based on its high retentive efficiency in removing particles as small as 0.10 micron and operation at high filtration rates with minimum pressure loss and slow plugging rates. Wool is chemically neutral and non-reactive with respect to common effluents. Felt filtering material has a number of other advantages.

(Information received from American Society of Mechanical Engineers, Dept. CP, 29 W. 39th St., New York 18, N. Y.)

### Allethrin insecticide production in first year is 50,000 to 60,000 lb . . .

product synthesized by USDA provides protection against many common insects

Report on first full year of commercial production of allethrin shows that manufacturers marketed 50,000 to 60,000 lb of the insecticide. Future production of material, first synthesized by US Dept. of Agriculture, is expected to reach 600,000 lb annually.

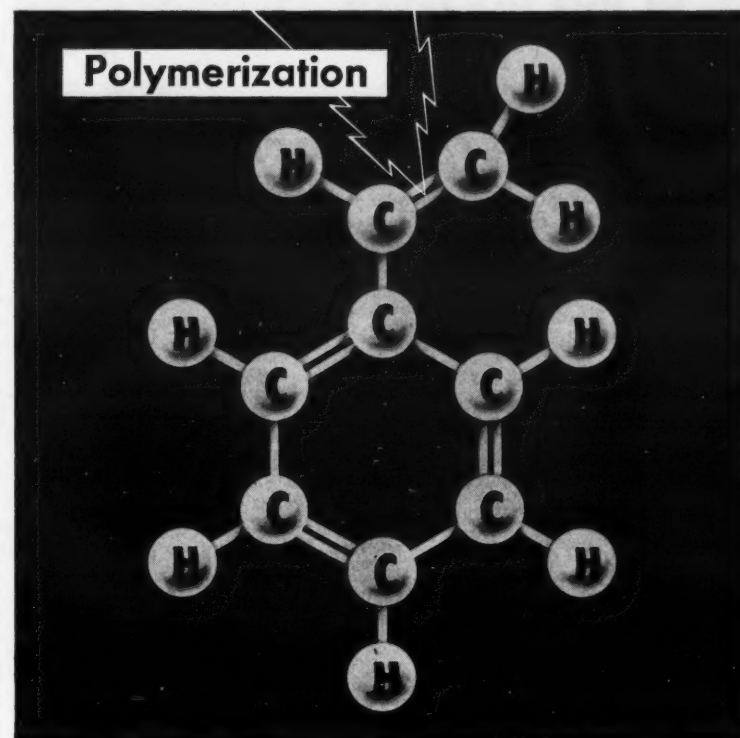
Allethrin provides quick knock-down of household pests such as flies and mosquitos. It is also effective against a wide variety of insects, including body louse, cattle lice, chrysanthemum aphids, foxglove aphids, and the tobacco moth. Army has used product to protect its personnel against malaria-carrying mosquitos. Chemical is widely used in aerosol dispensers, 12 million were supplied in a year.

Allethrin has proved itself a successful substitute and in many cases a replacement — for pyrethrum, which is obtained from flowers. Before World War II, pyrethrum came mainly from Japan. Since then imports have been chiefly from Kenya Colony and Belgian Congo. During last year, production of allethrin in this country was equivalent to about half of pyrethrum imported.

(Information obtained from USDA Report 2234-52, issued by U. S. Dept. of Agriculture, Agricultural Research Administration, Washington, D. C.)

## Can STYRENE

# help you improve present products or develop new ones?



● Styrene reacts with other monomers, such as isoprene, methyl acrylate, methyl methacrylate, acrylonitrile, butadiene and maleic anhydride to produce copolymers. Each of these copolymers differs in some way from pure polystyrene to give special resinous products for specific applications.

In its reaction with glycol maleate, styrene produces a laminating resin from which laminates of exceptional mechanical strength can be made using glass cloth or glass

fiber as a filler.

Styrene also reacts with a variety of drying oils, such as linseed oil, tung oil, blown soybean oil, dehydrated castor oil and oiticica oil to furnish styrenated drying oils.

Koppers Styrene Monomer is a versatile raw material with many valuable applications. It is worth your serious consideration for use in developing new products or improving existing ones.

Write for Bulletin C-1-119. No obligation, of course.



**KOPPERS COMPANY, INC.**  
Chemical Division, Dept. CP-23  
Koppers Building, Pittsburgh 19, Pa.

When inquiring check CP 7667 on handy form, pgs. 2-3



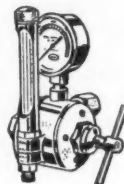
**For precise control  
of gas pressure**

## Airco Regulators

You can rely on Airco regulators whenever you must maintain precise gas flows and determine pressures with hairline accuracy. Various models provide dual or single stage control . . . high or low pressure regulation in cylinders or through manifolds and pipe lines. For oxygen, nitrogen, acetylene, helium, argon, hydrogen, natural gas and propane.

To find the answer to your particular gas regulating problem, write for Airco Catalog 5. It's yours for the asking.

Airco Model 8461 dual-stage metering regulator indicates actual flow; sees wide use in laboratory analysis and industrial processing.



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When inquiring check CP 7668 on handy form, pgs. 2-3

*Specialists*

*in stainless tubing*

*and pipe . . .*



Illustrated catalog available upon request

## AMASCUS TUBE COMPANY

STAINLESS STEEL TUBING AND PIPE  
GREENVILLE, PENNSYLVANIA

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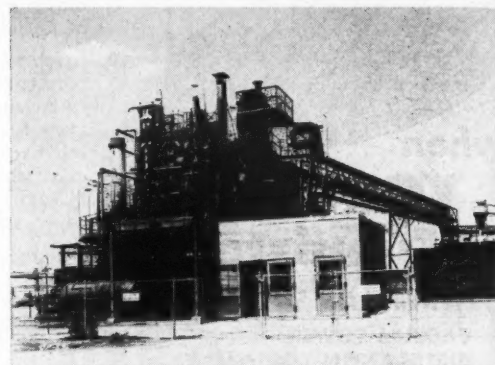
When inquiring check CP 7669 on handy form, pgs. 2-3

## IDEAS

### Rotocel extraction of cottonseed produces high yield of quality oil and meal . . .

residual oil content of granular meal is maintained well under 0.5 per cent

A compact plant designed for solvent extraction of prepressed cottonseed cake to produce high yields of quality cottonseed oil and meal is being operated in Lubbock, Tex., by Lubbock Cotton Oil Co. Employing Rotocel extractor and Blaw-Knox vapor



Installation designed for extraction of cotton seed is not housed. Highest point is 45 feet above ground

desolventizer, plant extracts coarsely ground cake to produce a bright, granular meal with residual oil content well under guaranteed maximum of 0.5%.

The plant is processing more than its rated capacity of 200 tons of seed per day. It stands on a slab 50 by 40 feet and is not housed. There are only two major operating levels and highest point is 45 feet above the ground.

(Plant was constructed by Chemical Plants Div., Blaw-Knox Construction Co., Dept. CP, 930 Duquesne Way, Pittsburgh 22, Pa.)

### Neutron bombardment of alloys simulates quenching from high temperatures . . .

final condition of irradiated beryllium-copper samples is similar to ones subjected to 600°F

A reactor, commonly referred to as a pile, is a device in which neutrons react with fissile material. Products of this reaction are fission products, neutrons, gamma radiation, and beta particles. If the chain reaction is to be maintained, the neutrons must be conserved, that is, the materials used in the construction of a reactor must not absorb too many neutrons.

Two aspects of the work on finding suitable reactor materials have involved investigation of: 1) cross-sectional areas to determine neutron-stopping ability, and 2) stability of material under neutron bombardment.

With respect to the latter property, results obtained to date on metals indicate that most materials exposed to radiation are hardened as a result, with the ex-



ception of aluminum. However, even this metal shows a marked increase in electrical resistivity when exposed to radiation at low temperature (180°C). This suggests that for aluminum metal, the effects may be annealing away as rapidly as they are developed. The magnitude of the hardening can be rather large. Single copper crystals, for example, have their critical shear stress raised by a factor of eight.

An experiment reported in the literature on a copper-gold alloy demonstrates the effects achieved by irradiation. In an alloy with a 3 to 1 ratio of copper atoms to gold, it is possible by proper heat treatment to order it. Normally, the atoms of copper and gold are located at random in the face-centered lattice. If the alloy is heated to 400°C and cooled slowly, the atoms take up definite positions in the lattice. The copper goes to the center of the faces of the cube and the gold to the cube corners.

In this experiment, the alloy in both conditions (ordered and disordered) was exposed to varying neutron exposures. An exposure of  $3.9 \times 10^{19}$  neutrons per  $\text{cm}^2$  effected almost complete disordering of the material. Quenching this alloy from 500°C also results in the disordered structure. Thus, the alloy acted after exposure like one which had been quenched from high temperature. A difference noted between the two treatments is that the neutron exposed sample increased in hardness whereas the quenched sample decreased.

Another experiment reported is one performed on beryllium-copper samples. Copper may be hardened by alloying it with beryllium and then heat treating. Latter consists of quenching a specimen which has been held for an appropriate time at 1470°F. In this condition the material is soft and referred to as solution treated. To harden it, the sample is held or aged at 500-600°F for 1 to 2 hours.

Upon irradiation, the final condition of solution-treated samples is similar to ones which have been heat treated. An exposure to  $9 \times 10^{19}$  neutrons/ $\text{cm}^2$  produces a material with a hardness rating of 102 (G Scale Rockwell); holding the material for 1 hour at 545°F produces a hardness of 101.

(From "Reactor Materials Requirements" by Dr. David H. Gurinsky, Division Head, Metallurgy Division, Brookhaven National Laboratory, U. S. Atomic Energy Commission, Upton, L. I., N. Y.)

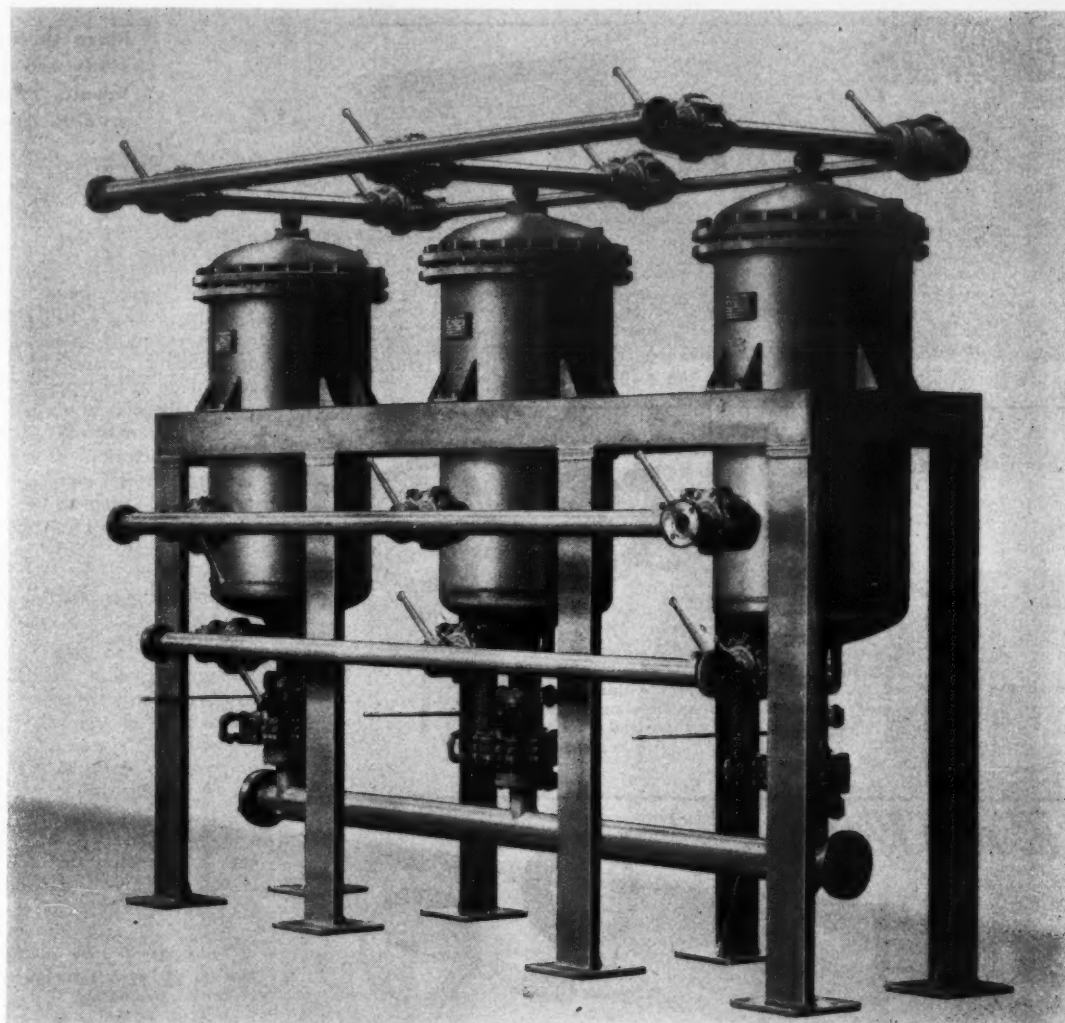
#### Refinery recovers off-gas sulfur, makes alkylation acid

Sulfur — almost 70 tons per day of it — is being recovered from off-gases of Gulf Oil's Port Arthur, Texas, refinery. The 99+% sulfur recovered is carried in insulated tank cars to an acid plant (also in the refinery) for conversion to sulfuric acid. The acid is used mainly in manufacture of alkylate for aviation gasoline.

The unit recovers more than 90% of the sulfur in the off-gases, which come from several purification units within the refinery.

(Gulf Oil Corporation, Dept. CP, 2800 Gulf Bldg., Pittsburgh 20, Pa.)

# ADAMS Molten Sulfur FILTERS



## Upgrade Your Raw Sulfur • Cut Acid Production Costs

Pioneers in the filtration of molten sulfur, the R. P. Adams Co. now offers the widely tested and

approved Poro-Carbon filters in complete, packaged plants.

You are invited to write for details in addition to the following salient features:

## R. P. ADAMS CO., INC.

243 E. PARK DRIVE  
BUFFALO 17, N.Y.

- ★ Cleaned by backwashing without disassembly
- ★ Filters, piping and valves steam jacketed
- ★ Includes filter aid feed and sulfur pump
- ★ Permanent, inert Poro-Carbon filter media
- ★ Extend catalyst effectiveness in acid production

When inquiring check CP 7670 on handy form, pgs. 2-3



# Thermometers

in all forms—ranges—stem lengths—connections

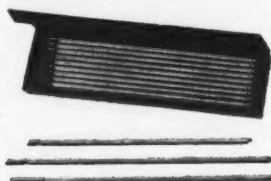
Whether your requirement calls for certified laboratory thermometers . . . or rugged all-metal industrial types . . . or thermometers for remote reading . . . you'll find exactly what you require in the Weston-TAG line—the most comprehensive line of quality thermometers ever offered by ONE manufacturer. Literature on request. WESTON Electrical Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, New Jersey.

## Laboratory



ALL-METAL

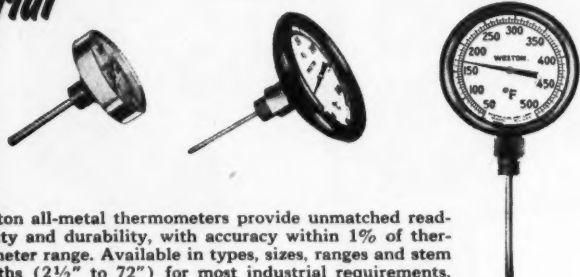
—have readable, dial-type scales and corrosion-resisting stainless steel stems—stem lengths from 2" to 24"—ranges from low as  $-100^{\circ}\text{F}$ . to high as  $1000^{\circ}\text{F}$ .—accuracy  $\frac{1}{2}$  of 1% of thermometer range.



GLASS

—certified sets of ASTM Testing thermometers with overlapping ranges in protective case. Ranges from  $-36^{\circ}\text{F}$ . to high as  $760^{\circ}\text{F}$ . Also precision and standard etched stem thermometers for general testing.

## Industrial



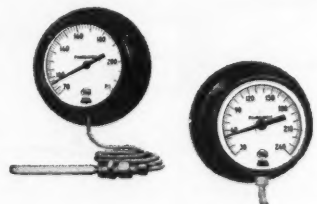
Weston all-metal thermometers provide unmatched readability and durability, with accuracy within 1% of thermometer range. Available in types, sizes, ranges and stem lengths ( $2\frac{1}{2}$ " to 72") for most industrial requirements.

## Remote Reading



ELECTRICAL

—resistor bulb sensing element permits mounting indicator any distance away from point of measurement. Multiple remote readings also possible by use of selector switch and several bulbs.



PRESSURE ACTUATED

—for remote reading, in 5, 6 and 8" dial sizes. Ranges from low as  $-325^{\circ}\text{F}$ . to high as  $1000^{\circ}\text{F}$ . Accuracy one scale division unaffected by vibration or severe shock. Cases of iron, brass, or plastic.

# WESTON Temperature Instruments

— TO INDICATE — RECORD — CONTROL

9413

When inquiring check CP 7671 on handy form, pgs. 2-3

Instrumentation  
& Control

## Catalysts: The Inside Story

More than a dozen approaches to catalyst study are available through X-ray methods. Results of using these methods in catalyst studies are told here by John S. Buhler

TWO basic ways of using X-rays, diffraction analysis and spectrometric analysis, can provide many types of data about catalysts or other materials. X-ray spectrometry can be used for chemical identification of elements present. This is done with an instrument using a Geiger counter and providing a chart record (Fig 1).

X-ray diffraction uses photographic film to record primarily structural data. (Though it, too, will yield chemical composition information.) Powder diffraction pattern is shown in Fig 2. Here are some of the facts that can be read from diffraction patterns —

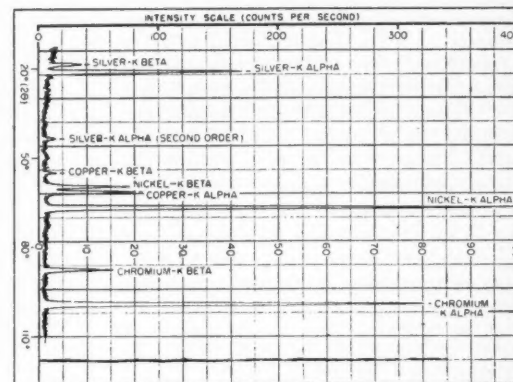


Fig 1 — Chart record from X-ray spectrometer shows which elements are present

Fig 2 — Typical X-ray diffraction pattern — showing structure of a quartz sample

- 1) Phase identification (qualitative or quantitative) of two or more identities
- 2) Lattice parameters
- 3) Solid or mutual solubility
- 4) Average particle size
- 5) Particle size distribution
- 6) Orientation in solid materials and correlation to mechanical or other data
- 7) Molecular weight (especially in difficult materials like high-weight proteins)
- 8) Stress concentrations
- 9) Grain size
- 10) Structure and degree of crystallinity
- 11) Order-disorder state
- 12) Atomic distribution in amorphous materials like glass
- 13) Coefficient of expansion
- 14) Chemical identification by reference to ASTM card index system for pattern spacing

### Fischer-Tropsch Catalyst Studies

Nickel or cobalt (or both) in combination with activating materials have been found to be effective in the Fischer-Tropsch process of combining carbon monoxide and hydrogen to form hydrocarbons. Typical activating material is thoria. Kieselguhr is used as a catalyst carrier, so that a typical catalyst for the process might be —

Material	Weight %
Nickel	28.5
Manganese dioxide	9.5
Thoria	2.4
(or alumina, tungstic oxide, or uranium oxide)	
Kieselguhr	59

Here's what X-ray analysis can do with such a catalyst. Particle size of nickel



can be found (by half-width intensity method) and controlled for optimum yield.

Manganese dioxide phase can be identified and controlled by previous conditioning. Checks can be made on the activator (thoria, or whatever) for detection of materials which would act as catalytic inhibitors. Kieselguhr carrier is usually prepared by chemical and thermal treatments to assure uniform quality and freedom from impurities. This purifying-conditioning process can be followed by X-ray.

But besides all this, small-scale tests of the catalyst with varying time-temperature cycles can be run and followed by X-ray methods. The results establish economic factors based on catalyst performance and life. And, with small-scale test data on hand, it is an easy matter to sample catalyst from full-scale operations to check on catalyst condition and theoretical performance.

#### Other Catalyst Studies

In the use of iron-copper precipitated catalyst it has been shown that 1) all active catalysts contain FeO and 2) that activity is least when sharp X-ray diffraction lines appear. This is due to large crystallites (responsible for sharp lines) which reduce surface.

It has been shown that addition of alkali carbonate to cubic  $\text{Fe}_2\text{O}_3$  stabilizes crystal form and prevents transition to  $\text{Fe}_3\text{O}_4$ . Since all oxides of iron have widely different diffraction patterns, quantitative changes can be followed by X-ray. This allows addition of just the proper amount of carbonate to prevent catalyst from changing from "active" to "less active" form.

Radical changes in catalyst activity can be due to small changes in composition (poisoning, for example). In the nickel-copper system, an active catalyst is one with a small amount of nickel dispersed in a large amount of copper. Copper containing less than 1 part per million of nickel was found to be inactive in hydrogenating benzene. When activated with 1 per cent nickel, it reduces 60 per cent of the benzene in 30 seconds at  $175^\circ\text{C}$ . But, if the active catalyst is heated to  $350^\circ\text{C}$  for two hours, activity drops off a third because a solid solution is formed in the copper.

Catalytic activity of substances like zinc oxide or activated carbon is directly proportional to surface area, hence can be related to mean particle size measurements. As alumina catalyst is heated, for example, powder pattern lines of gamma alumina become more and more sharp until finally alumina or corundum is obtained. This method is most effective when used with particles less than  $10^{-5}$  cm diam.

Ageing processes of thin palladium layers used as catalysts studied with X-rays showed that fatigued layers had crystallite sizes ranging from 250 to 1000 Angstroms while sizes of fresh layers were about 40 Angstroms. Studies also revealed that adsorption velocity of hydrogen on layers of small crystal sizes was high and independent of pressure. Layers of large crystallite size showed a lower adsorption velocity strongly influenced by pressure.

(Material presented here was gathered by John S. Buhler, Engineer with Research & Control Instruments Division, North American Philips Company, Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. . . . or for more information check CP 7672 on handy form, pages 2 and 3.)

## How would YOU solve these 2 problems?



**1. IN SOFTBALL MANUFACTURE** the most troublesome problem was to obtain absolute uniformity in the kapok cores. These determined hardness, density and shape of the finished balls. H. Harwood & Sons, Inc., of Natick, Mass. solved this problem by molding the cores under hydraulic pressure at closely controlled high temperature. Two inexpensive THERMOSWITCH units per mold provide the needed temperature control at low cost.



**3. THIS IS IT** — the Fenwal THERMOSWITCH control is simple — compact shell contracts or expands *instantly* with temperature changes, opening or closing electrical contacts. Adjustable and highly resistant to shock and vibration. Fenwal THERMOSWITCH units are solving temperature control problems and improving production throughout all industry.



**2. TAKING THE STRETCH** and shrink out of Nylon fish line posed a big problem. It can only be done under high heat. One manufacturer was quoted \$18,000 for complicated control equipment. Instead — and very successfully — he stretches the line in a heated die, temperature-controlled by a Fenwal THERMOSWITCH. Cost, less than \$25!



**4. SEND FOR THIS NEW CATALOG** for complete explanation of the unique THERMOSWITCH unit. Also ask for more detailed, illustrated discussions of the problems above. Fenwal engineers will be glad to help you solve your temperature control problems involving heat, humidity, radiant heat, pressure and other variables. Write **Fenwal Incorporated, 242 Pleasant Street, Ashland, Massachusetts.**



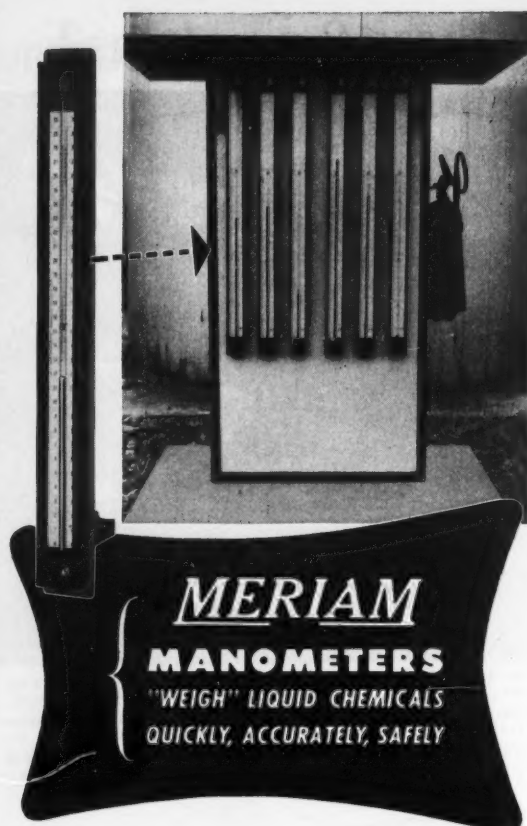
**THERMOSWITCH®**

Electric Temperature Control and Detection Devices

**SENSITIVE... but only to heat**

When inquiring check CP 7673 on handy form, pgs. 2-3





A prominent middle western chemical plant was confronted with the need to proportion, by weight, hazardous chemicals in formulating products. Personnel safety and need for immediate, exact knowledge for correct formulation, added to the problem.

Meriam Manometers provided the answer. In formulating liquid chemical products, direct weight readings are taken as various chemicals are added to the tanks. No tedious, involved mathematical calculations. No danger of injury to personnel through burning or falling. *Manometers give required information at a glance—saving time and expense.*

If you are confronted with difficult process indication requirements—involving measurement of flow or pressures of liquids and gases, consult the Meriam Representative in your vicinity or write us.

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ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 7674 on handy form, pgs. 2-3

## INSTRUMENTATION

**Records gloss of moving web of paper or waxed paper, similar materials . . .**

follows TAPPI method for gloss at 75°, can also be used for indication or test

**Uses:** Records gloss of paper as it is polished on a super calender stack, or as it is coated or calendered on the dry end of a Fourdrinier machine. It will also record fairly high glosses developed by waxing, lacquering, or other operations for continuous moving webs.

**Features:** Instrument measures 75° Specular Gloss in accordance with TAPPI method T480m-51.

**Description:** Instrument consists of two parts: an exposure head with built-in light source and photocells, and an electronic measuring unit which may or may not be used in conjunction with a standard recorder. Light is "bounced" at an angle of 75° from the vertical on the surface of the web. Amount of light picked up by photocells is compared to a reference photocell to make gloss measurements. Use of a reference photocell compensates for accumulation of dust in the measuring head as well as other variables. Standard automobile headlight bulbs are used — power is supplied by a 5 volt transformer. Since bulbs run at lower than rated voltage, they have service life of about 3 months in continuous operation.

Measuring unit may be located conveniently — it need not be especially near the pick-up head. It is designed so that the portion of the gloss scale concerned may be expanded allowing very close measurements. Chart records are also useful in showing operating time and down time for threading, breaks, and machine cleaning. Record usually also shows that highest gloss values are obtained at the start and finish of a run.

(75° Gloss Recorder is a product of Gardner Laboratory, Inc., Dept. CP, Bethesda, Md. . . or for more information check CP 7675 on handy form, pages 2 and 3.)

**Count rates from 1000 to 50,000 a minute are standard . . .**

accurate counter can also handle 500,000 counts a minute

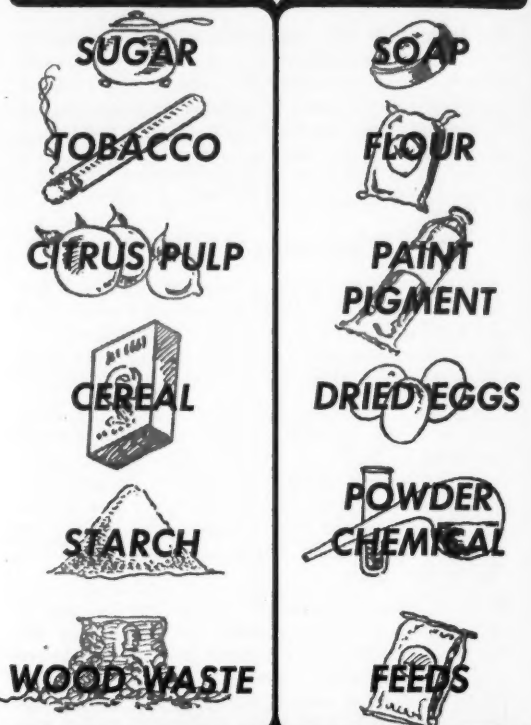
**Uses:** Count rate meter is designed to operate with standard scintillation counter and is normally supplied with counting rate multiples of 1000, 5000, 10,000, 20,000, and 50,000 counts per minute. It can also be supplied with scales up to 500,000 per minute.

**Features:** Amplifier has a rise time of 0.25 microseconds and a variable amplification up to 1500.

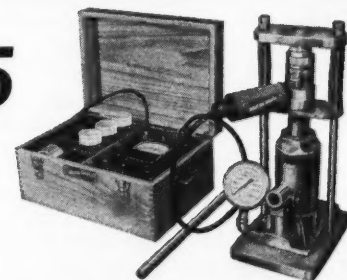
**Description:** Model CRM-500 scintillation count rate meter is an addition to a series of similar instruments. It employs an electronic discriminator accepting pulses from -100 to +50 volts.

High voltage supply is well regulated — providing variable voltages from 500 to 1800 volts regulated

# A 1 MINUTE MOISTURE CHECK OF PRODUCTS LIKE THESE



**WITH MOISTURE REGISTER'S NEW G5**



**GIVES YOU POSITIVE CONTROL OF THE QUALITY IN YOUR PRODUCT**

**WRITE FOR BROCHURE.** Free four page colored brochure is available with complete details on MODEL G5 MOISTURE REGISTER. Address MOISTURE REGISTER COMPANY, 1510 West Chestnut Street, Alhambra, California. Dept. CP5

**ELECTRONIC MOISTURE REGISTER**

MOISTURE REGISTER TESTING EQUIPMENT IS THE STANDARD IN MOISTURE TESTING FOR ALL INDUSTRIES.

When inquiring check CP 7676 on handy form, pgs. 2-3

to 0.005% per volt of change at the line between 95 and 100 volts. Switch on front panel allows selection of per cent error over the range 1, 2, 5, 10, and 20 per cent.

Sixty-cycle test switch for convenient checking rate meter performance is mounted on front panel. Panel also mounts other controls and switches. Meters indicate high voltage and rate.

(Model CRM-500 scintillation count rate meter is a development of Nuclear Research and Development, Inc., Dept. CP, 6425 Etzel Ave., St. Louis 14, Mo. . . or for more information check CP 7677 on handy form, pages 2 and 3.)

**Distinguishes liquid level, foam, or even interface between liquids . . .**

probe of on-off instrument will work at temps as high as 1500°F

**Uses:** Controller gives an on-off signal when level rises even with probe. Can be used to detect liquid or foam level and works well with viscous fluids, acids, bead and powder catalysts, or even in finding liquid-liquid interface.

**Features:** Sensitivity may be adjusted so that instrument reacts to, or ignores foam.

**Description:** Liquid level controller reacts to a change in capacity when probe is covered by liquid or other flowable material. Capacity change causes a radio-frequency oscillator to reduce or completely stop its oscillation when level gets above probe. Oscillation starts again when level falls below probe. This change in operation is used to generate a DC voltage signal which, through an amplifier, operates the relay. DPDT relay is usually furnished — though other arrangements can be had.

Instrument is self-contained except for probe which is attached to it by a 52-inch long cable. This cable cannot be altered in length. Thus, it is necessary to mount the instrument at the point of measurement. Electrical signal, of course, can be transmitted to a remote point for indication or control.

Probe itself is about six inches long, is coated with about 1/8-inch of Teflon. Threaded with 1-inch pipe threads, probe screws right into the vessel. It can be used at 30 inches of vacuum or 1000 psi. Flanged probes are used at these higher pressures.

Temperatures from 65 to 1500°F do not hinder operation of the probe, though instrument proper will not tolerate temperatures outside the range from 40 to 200°F. Standard AC power is required with instrument drawing 32 watts. Signal relay handles 10 amp at 110 volts. Only three electronic tubes are used (2051, 6SQ7, and 6X4).

(Electr-O-Probe Liquid Level Controller is manufactured by Instruments, Inc., Dept. CP, 122 N. Madison St., Tulsa, Okla. . . or for more information check CP 7678 on handy form, pages 2 and 3.)



**model 21-401** serves as a combination analytical and isotope-ratio mass spectrometer.

CONSOLIDATED Model 21-401, the newest member of Consolidated's family of mass spectrometers, is a compact, medium-price instrument, ideal for those laboratories having moderate analytical loads. It provides (1) automatically recorded mass spectra for quantitative analyses of gaseous or light-liquid mixtures, and (2) precise, recorded ratios of stable gaseous isotopes. Like the widely used Model 21-103, it is exceptionally accurate and incorporates many automatic, time-saving features. For the multitude of industrial and scientific applications not requiring extremes of mass range, sensitivity, and operating speed, the Model 21-401 is of maximum value. Write for Bulletin CEC-1821.

## Consolidated Engineering CORPORATION

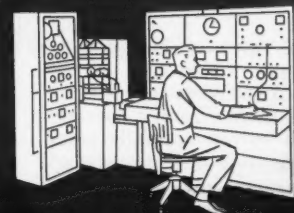
300 North Sierra Madre Villa, Pasadena 15, California

Sales and Service through **CEC INSTRUMENTS, INC.**, a subsidiary with offices in: Pasadena, Philadelphia, Chicago, Dallas.

analytical instruments for science and industry

# mass spectrometer

priced right for laboratories having moderate analytical loads



**model 21-103** Analytical Mass Spectrometer, a widely used for a broad variety of applications where the volume of work is large.



**ANALYTICAL SERVICE**—here to serve you if your analysis requirements do not justify the purchase of an instrument. This precision analytical laboratory service has been operated at the Consolidated factory in Pasadena since 1949—utilizing mass spectrometry under the supervision of Consolidated's experienced staff. For cost, handling of samples and other details, request Bulletin CEC-1813.

When inquiring check CP 7679 on handy form, pgs. 2-3



FOR SEVERE THROTTLING AND FLOW CONTROL SERVICES . . .

INSTRUMENTATION

**50 microamp is enough  
for full deflection  
on 11" scale . . .**

large indicator makes minute changes visible even at 40 to 50 feet

Effective scale length of this indicator is about eleven inches. Thus, instrument is clearly visible and readable at 40 to 50 feet distance. This high visibility makes it valuable as an industrial indicator or as a table model for use in demonstrations.

Panel area of the instrument is 15 x 16-inch. Actual measuring element is a conventional moving coil meter, but it has been modified with a capacity follower system. Pointer of this meter is free to swing in accordance with the signal. A second pointer, using capacity sensing, follows the first pointer and, through a servo system, drives the indicator pointer across the 11-inch scale. Full scale travel takes approximately 1½ second — about as fast a damped meter movement.

Full scale deflection can be obtained with a signal of 50 or 200 microamp, or one milliamp DC depending on sensitivity needed. Other sensitivities can be produced to order.

(Tektolog indicator is being produced by Fielden Instrument Division, Robertshaw-Fulton Controls Company, Dept. CP, 2920 North Fourth St., Philadelphia 33, Pa. . . or for more information check CP 7681 on handy form, pages 2 and 3.)

**Integrates with respect  
to time or another  
variable . . .**

unit combines both high speed of response and good long-time stability

Using computer techniques, manufacturer has developed an automatic electro-mechanical integrating unit. It provides an accurate time integral of any DC input function. Possible uses include analysis of graphical data, continuous process weighing, total water content determination, totalizing illumination applied in weathering or fading tests, etc. Unit is also capable of integrating two independent variables with respect to each other and independent of time.

Combining advantages of mechanical and electronic types, integrator has high speed of response, long-time stability, and unlimited output.

Time integral of input is registered on a mechanical revolution counter geared to the output. Output speed is made directly proportional to the integrand input signal through an accurate variable-speed drive. Feedback is used in this drive. In addition, electronic circuit detects transients or tachometer response errors and applies a correction factor. Unit can be used with a potentiometer recorder or other mechanical input. In this case signal is derived from a multi-turn potentiometer supplied with stabilized voltage from the integrator.

Unit is built with either one or two counters. Two-counter model incorporates electric clutches that can be operated either manually or automatically. Manual use of the instrument is convenient when separate

# NEW

## CRANE-PAUL Venturi-Ball VALVES

(Patented and Patents Pending)

**CAST STEEL OR CRANE 18-8Mo ALLOY**  
Outside Screw and Yoke—Flanged. Available with sliding stem for assembly with power operators.

Meet the Crane-Paul Valve—a unique design that combines desirable advantages of both gate and globe valves. It provides better service and longer life under more rigorous operating conditions than such valves normally stand. These features include—

Exceptionally accurate throttling with a minimum of wear and erosion, resulting in long-lived seating surfaces.

Straight-through, non-turbulent flow—with pressure drop characteristics approaching those of venturi-type gate valves.

Smooth, easy response throughout the entire range of operation.

Completely tight shut-off.

Heart of this new Crane-Paul Valve is a precision-ground ball disc which rides loosely in a cage direct-connected to the valve stem. In operation, the ball is moved to and from the center of flow and rolls into and out of the body seat. At no time during valve operation does the ball spin or chatter, even in closely throttled positions. It revolves just enough to provide a new seating surface each cycle. In the closed position, part of the ball actually protrudes into the outlet port where it is tightly seated by the wedging action of the ball cage.

### Literature Sent on Request

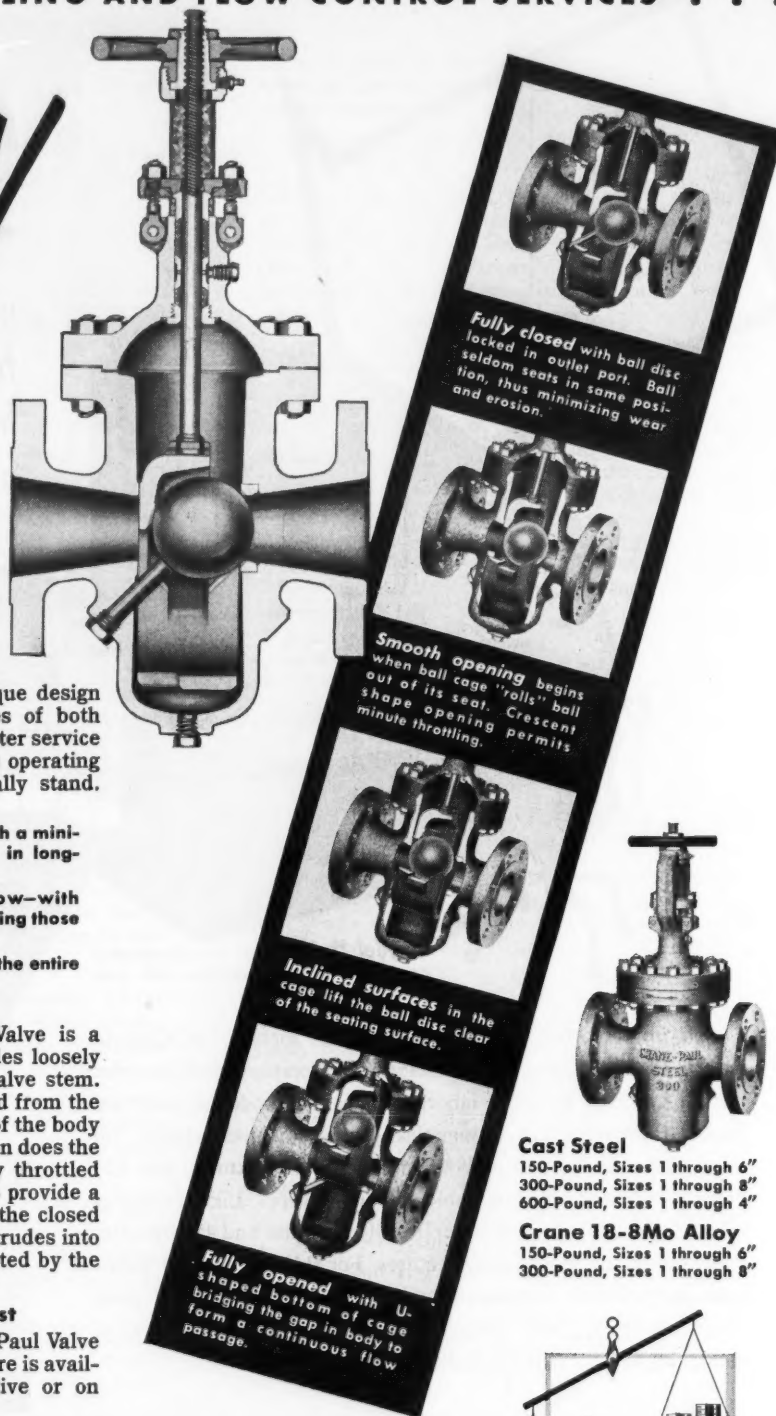
Full information on this new Crane-Paul Valve is in your Crane 53 Catalog. Literature is available from your Crane Representative or on request to address below.

## CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois  
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 7680 on handy form, pgs. 2-3



**Cast Steel**  
150-Pound, Sizes 1 through 6"  
300-Pound, Sizes 1 through 8"  
600-Pound, Sizes 1 through 4"

**Crane 18-8Mo Alloy**  
150-Pound, Sizes 1 through 6"  
300-Pound, Sizes 1 through 8"



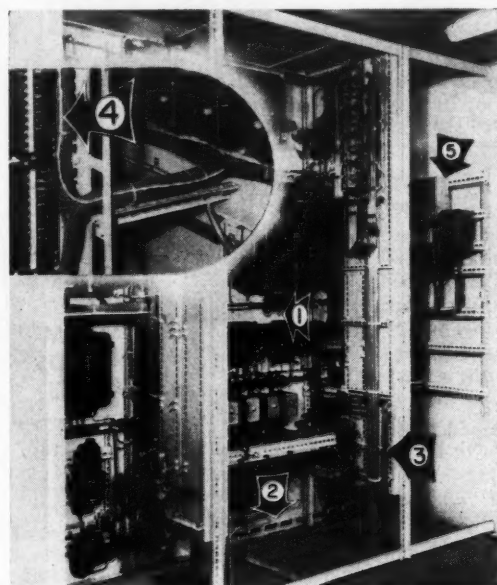


sections or portions of a single curve must be integrated.

(Automatic electro-mechanical integrator has been developed by Instron Engineering Corp., Dept. CP, 2 Hancock St., Quincy 71, Mass. . . or for more information check CP 7682, pages 2 and 3.)

**Design of control panelboard geared to space saving and access**

Automatic control panel incorporates several developments calculated to save space and make servicing faster and more efficient. This design has resulted from work in progress since 1947.



Keyed arrows in illustration refer to 1) wide opening through vertical supports, which allow maintenance men, or others, into the panel from the rear. 2) Control room floor openings which permit external tubing and wiring conduits to be completed well in advance of panel installation. 3) Tubeways, concentrated on vertical supports, provide centralized distribution points to panel mounted instruments. 4) Wireways enclose accessible electrical terminal blocks. Installing and testing becomes easier and faster because terminals can be reached. Individual wire bundles are carried out of wireways at points nearest to instrument and switch terminals. 5) Adjustable wall racks facilitate mounting of control boxes, alarms, relays, etc. This obviates need for welding special mounting pads to panel walls

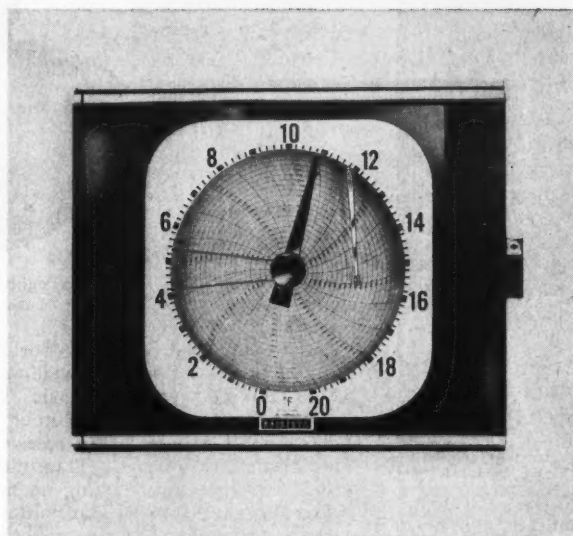
Realization of space-saving ideas can be shown in the fact that 12 square feet of additional equipment and tubing could be mounted in the panel shown without affecting the accessibility to instruments and controls.

(Panelboard shown was designed by Bailey Meter Company, Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio . . . or for more information check CP 7683 on handy form, pages 2 and 3.)

# BRISTOL ELECTRONIC

## DYNAMASTER POTENTIOMETERS

### feature Continuous Standardization!



BRISTOL DYNAMASTER with round (above) and strip (right) charts feature identical components and units, except for the chart drive.

#### Bristol Electronic Dynamaster Potentiometers for every use!

**Recorders**—single and multiple records and two continuous ink records;

**Electric Controllers**—on-off and all types of proportioning control;

**Air-Operated Controllers**—on-off, proportional (0 to 30% and 0 to 100%), reset, derivative, and reset plus derivative control actions.

**Write for free Catalog P1245 to The Bristol Company,**  
141 Bristol Road, Waterbury 20, Conn.

#### advantage 1:

**No dry cells to fuss with . . .**

thanks to Bristol's constant voltage source, which is continuously compared with the voltage of a standard cell.

#### advantage 2:

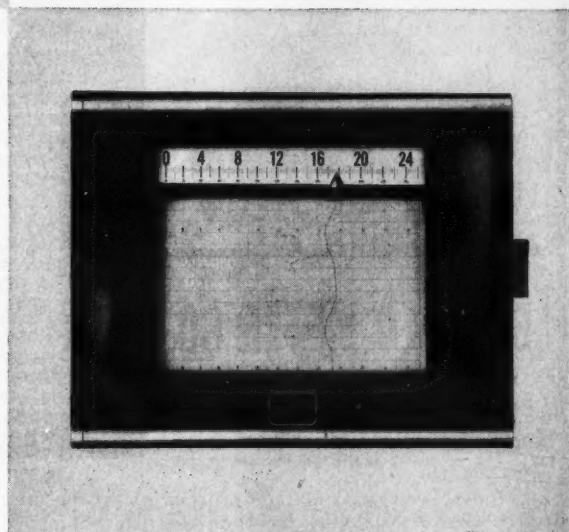
**Continuous operation . . .**

no interruptions for standardization.

#### advantage 3:

**No standardizing mechanism**

**No wonder the Dynamaster is the finest-performing potentiometer on the market!**



# BRISTOL

*The dependable Guidepost  
of Industry*

**AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS**

When inquiring check CP 7684 on handy form, pgs. 2-3

# "Measuring CORROSIVE LIQUIDS is no problem with NIAGARA STAINLESS STEEL METERS"



**BUFFALO METER CO.**  
2892 MAIN STREET  
BUFFALO, N. Y.

Whether you're measuring caustic soda, acids, molten sulphur or many other corrosive liquids, you want reliable measurement all the time. NIAGARA METERS—made of type 316 stainless steel—resist damage from a wide range of corrosive products. Maintenance is kept to the absolute minimum because of the unusual simplicity in construction of NIAGARA METERS.

If you process or use liquids of a corrosive nature, it will be to your advantage to investigate NIAGARA.

Send in the Data Request blank below today.

Gentlemen:

Please send me complete information on the use of economical NIAGARA METERS, based on the data below:

Liquid \_\_\_\_\_ Pressure \_\_\_\_\_ p.s.i.  
Temp. \_\_\_\_\_ ° F.  
Flow rate \_\_\_\_\_ g.p.m.  
Maximum batch \_\_\_\_\_ gals.  
Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

When inquiring check CP 7685 on handy form, pgs. 2-3

## INSTRUMENTATION

**High pressures produce useable air signals of 3-15 psi...**

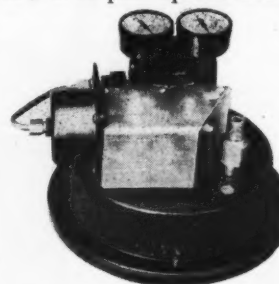
pneumatic transmitter reported practical for lines up to 1000 feet long

**Uses:** Pneumatic transmitter is available in a series of ranges capable of converting pressures from vacuum to 10,000 psi into pneumatic signals in a standard range of 3 to 15 psi. Special model is available for signals in a range from 5 to 25 psi.

**Features:** Transmission distances of 1000 feet are reported to be practical with this instrument.

**Description:** Instrument combines pneumatic transmitter and input and output pressure gages. Gages used are AA grade in either 6" or 8 1/2" sizes. Bourdon tubes are available in a wide variety of materials for handling corrosive, toxic, inflammable, or other hazardous fluids. Output is suitable for driving full size recording receivers or miniature indicating instruments. Transmitting instrument itself is very compact, taking no more panel space than the gage front. Transmitter is suitable for panel, pedestal, or wall mounting with either size gage.

(Pneumatic pressure transmitter is a product of Penn Industrial Instrument Corp., Dept CP, Penn Bldg., 4110 Haverford Ave., Philadelphia 4, Pa. . . . or for more information check CP 7686 on handy form, pages 2 and 3.)



Two output ranges: 3-15 and 5-25 psi

**Designed for pilot plant work, valves operate at 30,000 psi, extreme temperatures...**

conventional high-pressure fittings couple valve to 1/8 to 1/2-inch pipe

**Uses:** Pilot plant or other high-pressure work where control valves are needed.

**Features:** Standard models have working pressure ranges of 10,000 and 30,000 psi — special assemblies can be made to handle 50,000 psi.

**Description:** Control valves are specially designed for pilot plant work where low flow control is needed. Valve is pneumatically controlled. Sizes range from 1/8 through 1/2-inch pipe for threaded, welding, Superpressure, and Autoclave End threadings. Combination of four interchangeable plugs and two seat rings provides a Cv selection of values 0.0016 to 1.00. Flow characteristics are normally linear.

Piston operator combined with multiplying mechanisms develops thrust forces up to 6000 lb for positive shut-off and accurate position of valve plug.

It's Automatic!  
It's Accurate!  
It's Dependable!  
It's Self Operated!

It's the LOW PRICED

## TEMPERATURE REGULATOR



**STACON  
SERIES V  
for  
STEAM  
LIQUIDS  
GASES**

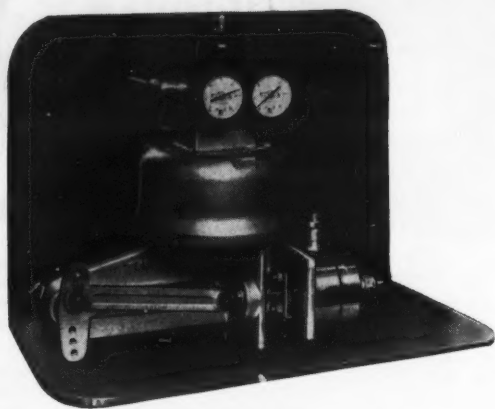
- SIMPLE, RUGGED, LOW COST, FIELD-REPLACEABLE THERMOSTATIC SYSTEM
- TIGHT SHUT-OFF; Self aligning single seated construction insures tightness.
- SUPER-POWER INSTANTANEOUS RESPONSE; Liquid expansion, throttling action, insures positive, constant control.
- OVERLOAD PROTECTION
- EXTREMELY COMPACT AND STURDY

Write for Bulletin ST-162 Today

**Farris**  
STACON CORP.  
400 Commercial Ave., Palisades Park, N. Y.  
AFFILIATES  
FARRIS ENGINEERING CORP.  
FARRIS FLEXIBLE VALVE CORP.  
FARRIS HYDROTORQUE CORP.  
FARRIS HYDROSEAL CORP.

When inquiring check CP 7687 on handy form, pgs. 2-3





Special units for 50,000 psi, 1200° F

Accurate control is available for very small flow rates, even at differential pressures of 10,000 psi. Travel limit stops with built-in reversing arrangement are part of the design. Air may be used to open or to close the valve.

Standard materials of construction are 304, 316 or 347 stainless steel. Valves are also furnished on special order made of D-20 nickel, Monel, Hastelloy or any other available alloy. Cooling fins may be specified since temperature range for normal operation runs from -430° to 1200° F.

(Wee Willie valve is development of The Annin Co., Dept. CP, 3500 Union Pacific Ave., Los Angeles 23, Calif. . . . or for more information about this product simply check CP 7688 on handy form between pages 2 and 3.)

**Relay is only moving part  
in electrical controlling  
cycle timer . . .**

resistance-capacitance network permits 0.2 to 200 second "on" cycle; 0.1 to 100 second "off"

**Uses:** Timer provides electrical control for short cycles. It has been successfully used in filter cleaning, heat cycling, sampling, electroplating, plastic molding, bag and bottle filling, and in similar fast, repetitive operations.

**Features:** Single electronic tube and resistance-capacitance network drive the only moving part — a DPDT relay. "On" cycles are adjustable from 0.2 to 200 seconds and "off" cycles range from 0.1 second to one minute.

**Description:** Timer is housed in a steel cabinet 6 x 6 x 6 inches overall. Sloping face of cabinet contains "on" and "off" time adjustments plus necessary switches. Relay output (AC) is up to 10 amp at 115 volts or 2 amp at 460 volts. Relay contacts are wired to an external terminal strip for fast installation.

(Electronic repeat cycle timer is a product of G. C. Wilson & Company, Dept. CP, 2 N. Passaic Ave., Chatham, N. J. . . . or for more information check CP 7689 on handy form, pages 2 and 3.)

## A Superior Controller must be readily adaptable



### FIELD MOUNTED THE FLEXIBILITY OF THE CONTROLLER TYPIFIES P-4 PNEUMATROL

The "building block" design and construction of Fischer & Porter P-4 Pneumatrol units provides the maximum in versatility of use. These design features permit ready change of a case mounted Pneumatrol into a field mounted controller by the mere addition of pre-built, basic elements. This unique feature of the P-4 assures minimum spare parts inventory and simplifies servicing.

The P-485 field mounted controller combines the best features of force and motion balance controllers by the unique application of paired bellows elements for precision, speed and permanence. It is the fastest field mounted controller and yet

has completely stable high frequency response. P-4 Pneumatrol units are extremely compact in size, simple in operation and completely corrosion resistant.

The plug-in type companion manifold has been just as thoroughly designed as the P-4 and includes built-in cut-off relay, automatic output cut-off below 1 psi setting pressure, positive self-sealing ports with unusually large air passages to prevent degrading the control response.

F&P P-4 Pneumatrol flow controllers are extremely versatile in their application. Complete information is yours for the asking. Write today!

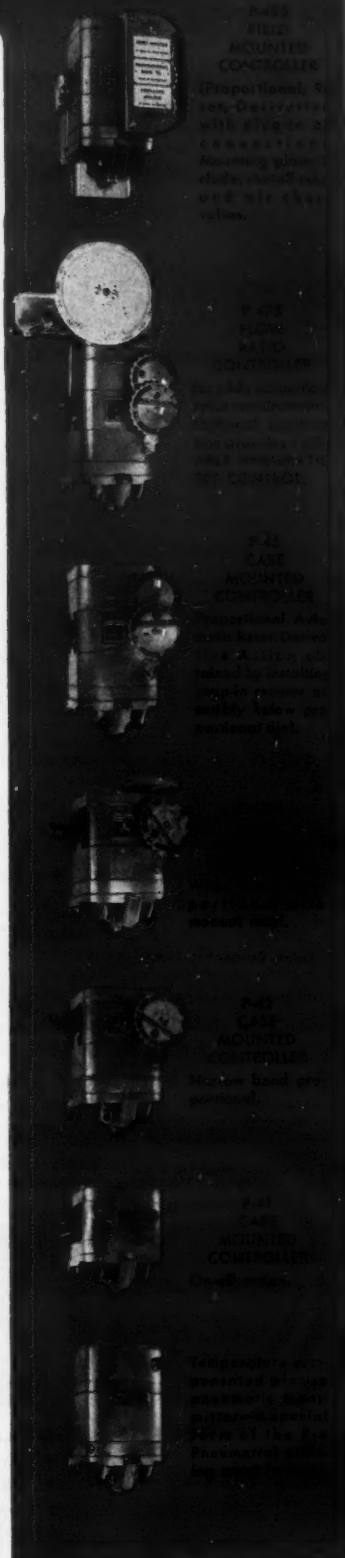
## FISCHER & PORTER CO.

© 1955

320 County Line Road, Hatboro, Penna.



When inquiring check CP 7690 on handy form, pgs. 2-3





## What's YOUR Heating or Air Conditioning Control Problem?



...with their 60 years of experience installing pneumatic systems of temperature and humidity control in all types of important buildings are well qualified to help you obtain the greatest return from an investment in —

### ACCURATE UNIFORM CONTROL

in all types of heated or air conditioned spaces—offices, factories, process rooms, processes, research and test laboratories, packaging or storage rooms. You can gain...

**Increased Efficiency and Output of Workers** by keeping each room or department at its proper temperature.

**Cuts Heating Costs up to 25%—23% fuel savings** reported by E. R. Squibb & Sons. With today's higher fuel costs bigger savings than ever before are possible with Powers control. It eliminates fuel wasted by OVER-heating with manual operation.

**Precision Control for Processes**—Wherever product uniformity and quality are dependent upon precise temperature and humidity regulation use Powers controlling, indicating or recording instruments.

**Phone or Write Powers Nearest Office** for aid in selecting the type of automatic control that will give best results for your requirements. There's no obligation. Powers control systems can be installed in existing as well as new buildings.

#### Some Prominent Users of Powers Control:

Ford Motor Co.  
Chrysler Corp.  
Esso Research Center  
Sears Roebuck & Co.  
Bendix Aviation Corp.  
Goodrich Tire & Rubber Co.  
Eastman Kodak Co.  
Pepperell Mfg. Co.  
Armour & Co. • Swift & Co.  
Bachmann Uxbridge Corp.  
Monsanto Chemical Co.  
U. S. Capitol Bldg.  
M.I.T. and Harvard Univ.  
N. Y. Stock Exchange



### THE POWERS REGULATOR CO.

Skokie, Ill. • Offices in Over 50 Cities, see your phone book.

OVER 60 YEARS OF TEMPERATURE AND HUMIDITY CONTROL

## INSTRUMENTATION

**10 microseconds is limit of counter in measuring elapsed time...**

it can also count 1 to 1 million cycles per second or act as a frequency standard

**Uses:** Two general types of instruments described here are intended for rapid and accurate production test methods. One type is restricted to work of this nature, second type has been designed for flexibility, is capable of performing any known function in counting, timing, or frequency measurement also.

**Features:** Either 1-2-4-8 or conventional 0-9 read-outs may be provided. Frequency-time counter models will count up to one million cycles per second, or measure elapsed time accurate to 10 microseconds. These can also be used as secondary frequency standards in a range from 100 kc to 1 cycle per second.

**Description:** Frequency counter models 820 and 830 are smaller in size and weight than earlier versions. They are designed for table top or rack mounting. Special bracket kit used for rack mounting, permits access to counter on slides. These models would typically be employed as calibrating oscillators, or for measurement of flow, pressure, rotational speed, etc.

Frequency-time counter models 840 and 850 contain timing, gating, and switching arrangements for a wide range of uses. These include direct counting of frequencies up to 1 megacycle, timing period of a cycle within ten microseconds, or use as secondary frequency standard. Even higher frequencies can be measured by beating signal against a known standard. For use as secondary frequency standards, outputs are divided from a frequency divider at 100, 10, 1 kc, 100, 10, and 1 cps.

(Models 820, 830, 840, and 850 timers are products of Potter Instrument Company, Inc., Dept. CP, 115 Cutter Mill Road, Great Neck, New York... or for more information check CP 7692 on handy form, pages 2 and 3.)

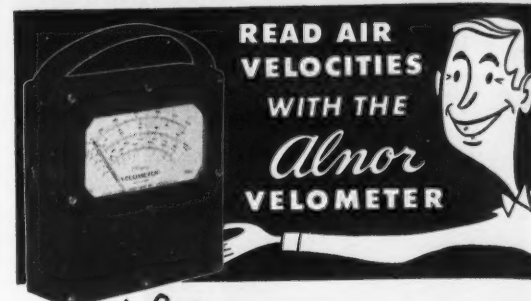
**Harness "brain" to spectrometer for speeded-up performance in analysis...**

mass spectrometer-computer combination scans and records 40 peaks in 6 min 40 sec

Errors have been reduced while time is saved by coupling analog-digital converter to a mass spectrometer for analytical work. Instrument system is of particular value in petroleum and petrochemical fields.

The instrument is designed to handle large numbers of very similar mixtures — typically, those to be assayed in standard control work. Because of its time-cutting ability, it may be the only practical method for some complex mixture analyses.

Mass spectrometer data is converted to digital form automatically with an accuracy of one tenth of one per cent. This eliminates tedious recording of individual peaks on graphical records by



**READ AIR VELOCITIES WITH THE Alnor VELOMETER**

*it's fast*

... you get instant, precise readings directly from scale face... no need for reference charts or calculations. Measure air flow through ducts, grilles, motors, spray booths, etc., or in the open.

*it's accurate*

... brings laboratory standards of air velocity measurement to the production line, mine, mill... anywhere. Needs no special care or handling... anyone can use it and get accurate results.

*it's portable*

... completely self-contained, hand-held. Rugged construction and sturdy case protect the Velometer from usual hazards of portable use. Available in scale ranges to 24,000 f.p.m. Wide selection of jets and fittings assures adaptability of Alnor Velometer to your application. Get full details and prices, write for Bulletin 2448-G. Illinois Testing Laboratories, Inc., Rm. 504, 420 N. La Salle St., Chicago 10, Ill.

**Alnor**

**PRECISION INSTRUMENTS FOR EVERY INDUSTRY**

When inquiring check CP 7693 on handy form, pgs. 2-3



**FOR EVERY APPLICATION**

PRESSURE	LIQUID LEVEL	WEATHER-PROOF
TEMPERATURE	EXPLOSION-PROOF	RELAYS

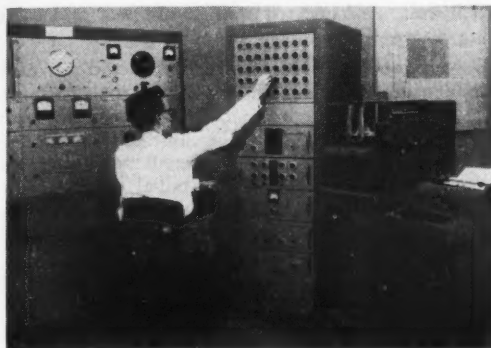
If you have an automatic control problem involving the control of pressure, temperature, liquid level or mechanical movement, write for Catalog No. 700A. Relays, valves and mercury switches are also listed therein.

**THE MERCROID CORPORATION**  
4201 BELMONT AVE., CHICAGO 41, ILLINOIS, U.S.A.  
New York: 205 East 42nd St. Philadelphia: 3137 N. Broad St.

When inquiring check CP 7694 on handy form, pgs. 2-3

When inquiring check CP 7691 on handy form, pgs. 2-3

operators. Digital values of peak heights are available immediately after the scan in either punched card form or tabulated form. Only ten seconds are required to scan a mass number and record its peak. Thus, 40 peaks can be scanned and recorded in 6 minutes, 40 seconds. Up to 40 mass numbers may be preselected and pro-



Peak height scanned and recorded accurate to one part in a thousand in just ten seconds

grammed by instrument combination. Peaks may be in range of mass 40 through 150. A second range of 12 through 122 is also possible.

Conventional record of specific peaks may be obtained simultaneously on a digital readout. Decimal coded lights on control panel facilitate this monitoring.

(Spectro-Sadic is a combination of an Analytical Mass Spectrometer and recently announced SADIC analog-to-digital converter. Both units are products of Consolidated Engineering Corporation, Dept. CP, 300 N. Sierra Madre Villa, Pasadena 8, Calif. . . . or for more information check CP 7695 on handy form, pages 2 and 3.)

#### Miniature speed changers have high output torque

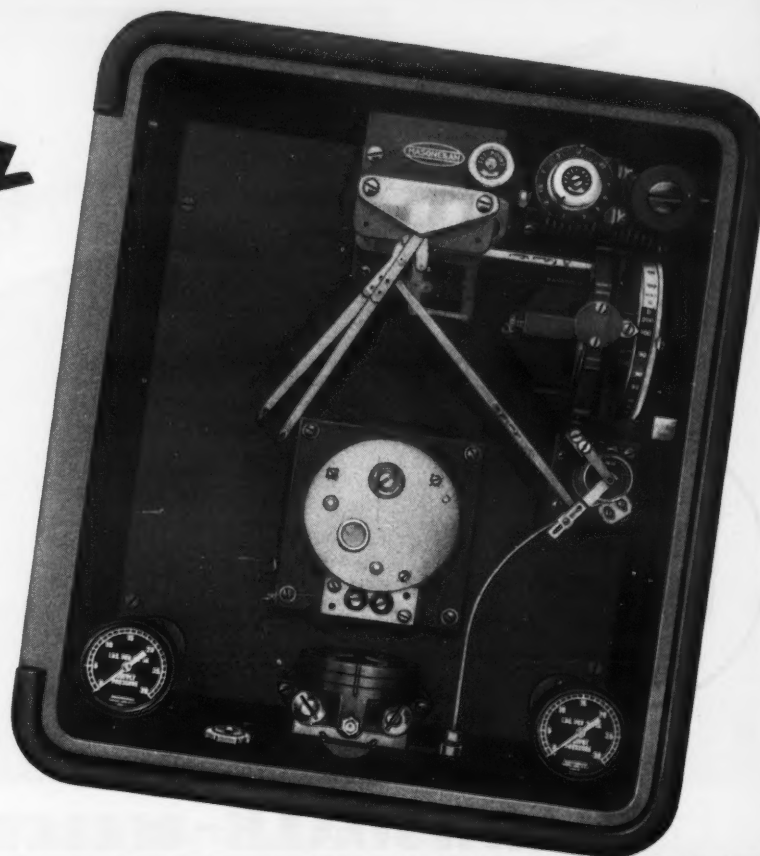
Small enough to hide in your hand and weighing only 6 oz, miniature variable speed changers show little speed variation with change in load. Readily available, designed for adaptability, units have wide range of applications from food and chemical processing to atomic energy research.

List of typical applications includes analyzers, cameras, chart drives, chemical process testers, computers, flow controls, indicators, instrument test equipment, mixers, optical drives, oscillographs, pneumatic generators, process controllers, recorders, regulators, servomechanisms, small motor drives, speed test stands, switch drives, and timers.

Specifications, uses, and features of speed changer units are given in four-page bulletin. Bul 99 is issued by Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 7696 on handy form between pages two and three.

# See it Work

## in your plant



## Masoneilan 60000 Series Controller

Ask a Mason-Neilan engineer to bring a demonstrator model into your own office or plant — and see the difference. Note these outstanding qualities . . .

### GIMBAL UNIT

See how *ONE CONTROL MECHANISM* gives you *FOUR COMBINATIONS* of primary and feedback motion to obtain Direct or Reverse Proportional (includes On-Off), or Differential Gap control.

### SIMPLE ADJUSTMENT

Make only *ONE SETTING* — without removing chart — to select type of control, direction of action, and percent proportional band or differential-gap. See how easy to adjust, test and service, too, because all unit assemblies are directly accessible, easily detached, interchanged. Note how all air passages are manifolded.

### STUBBORNLY DEPENDABLE

Accurate, stable performance, plus unequalled simplicity, versatility and reliability make the Masoneilan 60000 Series Pneumatic Controller the *Instrument Man's Instrument* for pressure, temperature, liquid level or flow control.

(Call in a Mason-Neilan engineer at your earliest opportunity)

## MASON-NEILAN REGULATOR CO.

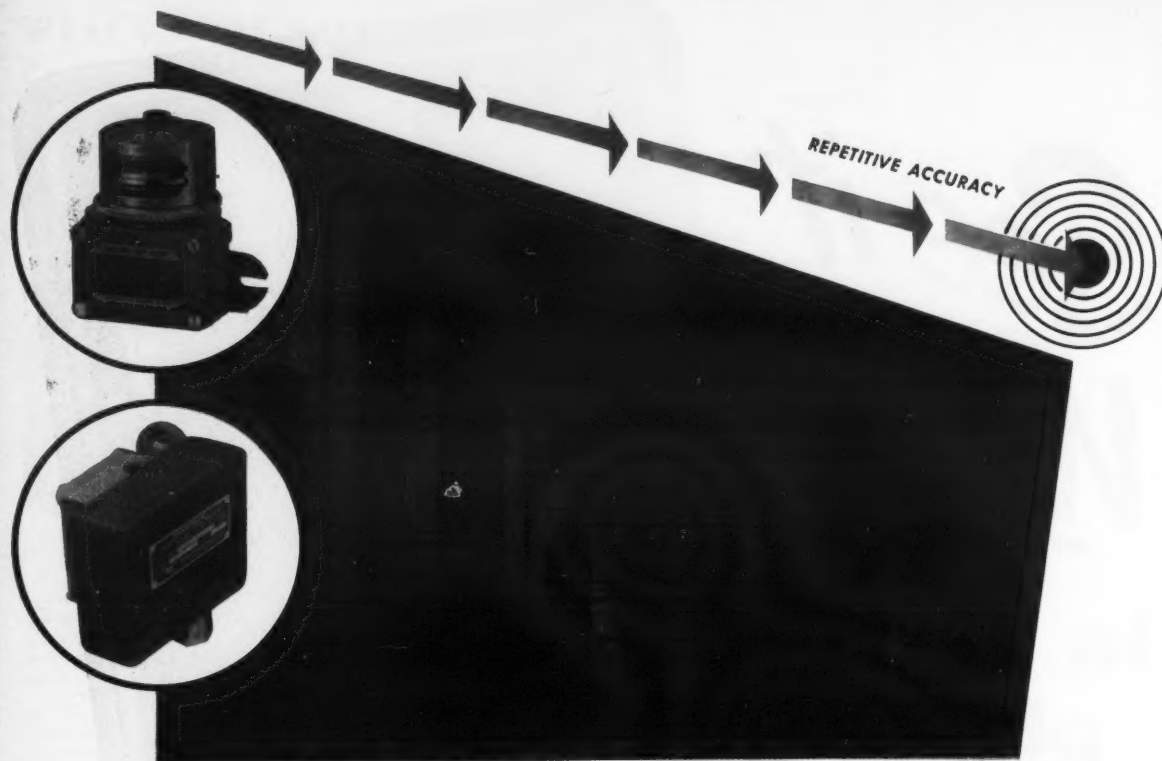
1203 ADAMS STREET, BOSTON 24, MASS., U.S.A.



Sales Offices or Distributors in the Following Cities:

New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Birmingham • Atlanta • Cleveland  
Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso • Boise • Albuquerque • Charlotte • Los Angeles • Denver  
Appleton • Corpus Christi • New Orleans • Louisville • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 7697 on handy form, pgs. 2-3



## BARKSDALE-MELETRON

### PRESSURE SWITCHES

... stand guard over pressure changes in chemical processing plants.

They accurately sense the pressure safety limits  
and initiate electrical action to maintain them.

Wherever a pressure or vacuum change must cause electrical response,  
there is a Barksdale or Meletron Pressure switch to perform that function.

APPROVED  
**UL**  
FOR EXPLOSIVE  
ATMOSPHERES

NOT AFFECTED BY VIBRATION

OPERATES IN ANY POSITION

For complete technical information see our Catalog in Sweet's 53 File  
for Product Designers and in the Plant Engineers File  
or write for Catalog 2M-S.



## BARKSDALE VALVES

1566 EAST SLAUSON AVENUE • LOS ANGELES 11 • CALIFORNIA

When inquiring check CP 7698 on handy form, pgs. 2-3

## INSTRUMENTATION

### Clean and dry, "Instrument air" comes out at 30 scfm . . .

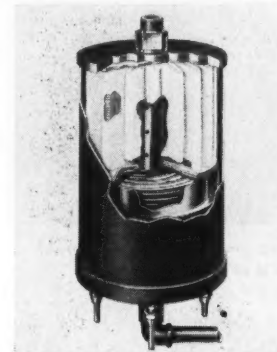
condenser-filter requires only compressed air  
and cooling water to function

**Uses:** Supplies 30 standard cubic feet per  
minute of clean, dry air for pneumatic instruments  
or other needs where comparable purity is required.

**Features:** Aside from air compressor and cool-  
ing water, this unit consumes no power.

**Description:** Cloth-covered filter and a coiled  
condensing tube are the two principal parts of

"Condensifilter" air  
unit. Flannel-cover-  
ed mesh filter has  
radial fin design  
providing more than  
540 square inches  
of filtering area.  
Whole cartridge is  
replaceable for min-  
imum maintenance.



540 sq in of filter surface, 400  
sq in of cooling surface

Condensing unit  
provides 400 square  
inches of cooling  
coil surface. Dew  
point of air can be  
lowered to within 2  
or 3 degrees of cool-  
ing water tempera-  
ture. Condensate is

drained through a float operated, snap-action trap.  
There is no pressure loss during trap's draining  
period. Its operation is automatic.

Rated capacity of unit is 30 standard cubic feet per  
minute at 100 psig. Units can also be operated in  
parallel where still greater capacity is required. Units  
in parallel can also provide for uninterrupted service  
when cleaning is needed. Under normal conditions,  
they should have filters replaced twice a year.

In operation, air enters through central shaft at  
bottom and is dehydrated as it passes through cool-  
ing coils of condenser section. Dirt, oil, and other  
contaminants are removed by filter cartridge. Clean  
air is taken into top of central shaft and leaves  
through top connection. Moisture and some con-  
tamination is discharged through trap.

(Model B-30-D Condensifilter is a product of  
Hankison Corp., Dept. CP, 141 Biltmore Bldg., 951  
Banksville Road, Pittsburgh 16, Pa. . . . or for  
more information check CP 7699 on handy form,  
pages 2 and 3.)

### Good stability reported for high frequency titrator . . .

operating at 7 megacycles, conductimetric unit  
can detect 0.03% change in conductance

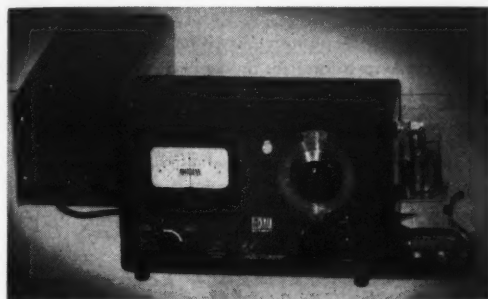
High frequency conductimetric methods for de-  
tecting endpoints in titration were initiated in  
1938. In the past few months several commercial  
instruments have been developed for use in this



interesting field. In the past difficulties have been encountered in radio frequency oscillators which lacked stability when loaded by a chemical system. Difficulties have also been encountered when coupling a chemical solution to the load circuit of oscillator.

Generally, it has been found that coupling between the oscillator and the chemical system should be dominantly capacitive. High frequency (7 megacycles) titrating instrument shown has been designed to employ capacitive coupling.

In its most sensitive ranges of operation, this instrument can detect changes of as little as 0.03% in conductance. Cases in point would be the determination of concentration of sodium chloride



Detects titration and points, concentrations, dielectric constants

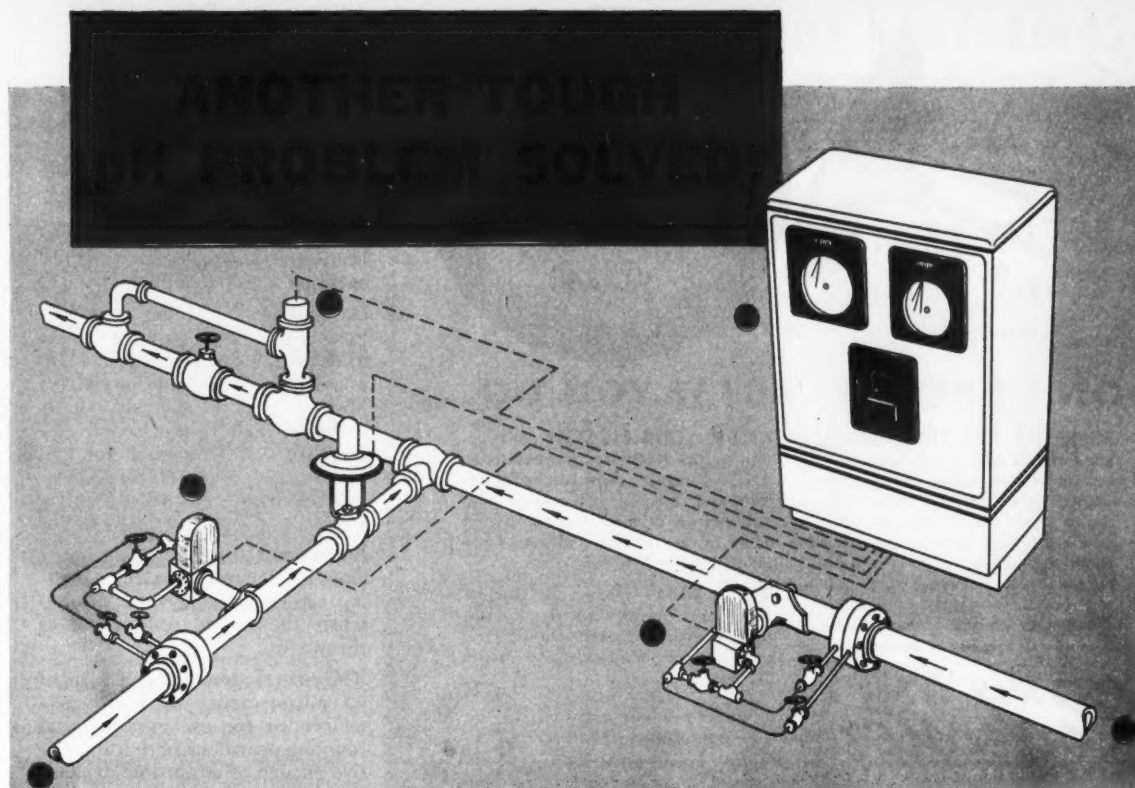
solutions at 20°C in the range from 0.15 M to 0.006 M and from 0.0015 M to 0.0001 M. Interesting feature of the determination of conductance at this frequency is that there is no essential difference between it and conductance values determined at low audio frequencies. Thus, if classical conductance figures are known for any reacting system, usefulness of this instrument for such a system can be easily predicted.

As with other conductometric instruments, and some electrolytic determinations, most accurate results are found by plotting meter readings against volume of reagent used. And, differential method may also be used — plotting meter deflection per increment of titrant against total volume of titrant added. Resultant curve shows rate of change of electrical property.

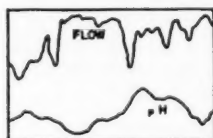
Two types of electrodes can be used — glass containers may have fired-on metal electrodes which do not contact the solution being tested, or probe-type electrode assemblies may be used (chiefly in comparative dielectric measurements). Tuning dial is graduated and equipped with a vernier in order that instrument may be read accurately. Temperature corrections must be made during runs.

Instrument is designed to operate stably at its assigned frequency regardless of loading from the chemical system.

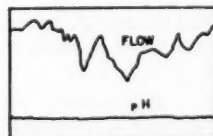
(High Frequency Conductometer is a development of Beckman Instruments, Inc., 820 South Mission Street, Department CP, South Pasadena, California. At present this instrument is *not* yet in commercial production.)



### ... by FOXBORO Coordinated Control



THE PROBLEM: To control the pH of fluid (A), a corrosive material varying both in volume and concentration. Flow and unadjusted pH of (A) are shown in curves (left). Since there is no capacity in the system, the high rate of change of flow makes simple pH control inadequate. Adjusting chemical (B) is in a head tank and has constant concentration.



THE SOLUTION: Flow ratio control is employed to maintain the flow of (B) in precise relation to the varying flow of (A). The ratio itself is continuously adjusted by a pH controller. Flow measurements are transmitted to the ratio controller by stainless steel differential pressure cells (D) and (E), while pH is measured at a point (C) where the reaction is complete.

**INSTRUMENTATION:** Foxboro d/p Cells (D) and (E) are mercury-less, highly accurate and corrosion-free. Max. working pressure, 1500 psi. Min. differential range, 0-100".

Flow-Ratio Receiver-Controller, with Pneumaticset — a Model 40 Stabilog®, having proportional and automatic reset control-action.

pH Dynalog® Electronic Controller provides continuous stepless balancing. Unmatched sensitivity, response, and accuracy. No slide wires. Range 3-10 pH. Provides Pneumaticset control with proportional reset and derivative (Hyper-Reset) action. pH flowtype electrode assembly for pressures up to 30 psi. Maximum temperature 194°F.

Cabinet (F) is of dustproof construction, rust-proof finish, with removable instrument panel. All instruments completely wired and piped before shipment.

The same facilities and engineering skill that produced the solution above are available to help find the most effective answer to your specific pH control problems. Why not discuss them with your nearby Foxboro engineer? Send for pH Bulletin 430. The Foxboro Company, 812 Neponset Ave., Foxboro, Mass., U.S.A.

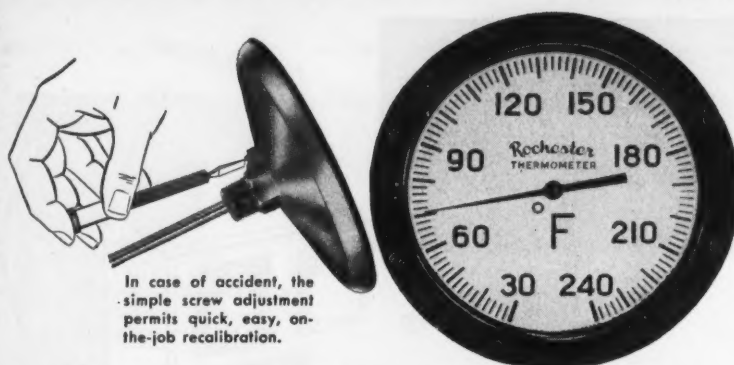
\*Reg. U. S. Pat. Off.

# FOXBORO

REG. U. S. PAT. OFF.

## COORDINATED CONTROL

When inquiring check CP 7700 on handy form, pgs. 2-3



## DON'T DROP IT! BUT IF YOU DO...

**ROCHESTER DIAL THERMOMETERS** are built to take severe blows without damage to their sensitive movements. But when hit hard enough to knock them out of adjustment, all you need is a screwdriver to put them right back on the job—as accurate as ever. This unique Rochester recalibration feature eliminates the danger of costly production errors due to inaccurate readings.

**WELDED STAINLESS STEEL** construction makes Rochester thermometers more durable, sensitive, pressure tight and resistant to corrosion than any before offered. Backed by 35 years of instrument making experience.

**ORDER TODAY** from your Rochester Representative, or write for further details. Rochester Manufacturing Co., Inc., 86 Rockwood Street, Rochester 10, N. Y.

**Rochester**

Manufacturing Company, Inc.  
86 Rockwood St., Rochester 10, N. Y.

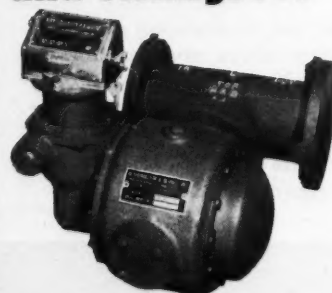


DIAL THERMOMETERS GAUGES AMMETERS

When inquiring check CP 7701 on handy form, pgs. 2-3



## Jacketed Pipe, Pumps, Valves and Fittings...

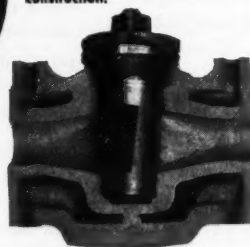


Jacketed Meter, with set-back register, for measuring viscous liquids.



At left: Jacketed 3-Way Plug Cock.

Below: Cutaway section of Jacketed Cock, showing packing gland construction.



## for maintaining uniform temperatures (hot or cold) in process pipes

Regardless of whether the material is being heated or cooled in the processing, and what heating or cooling medium is being used, H & B jacketed fittings are available for all applications. Steam, hot water or hot oil may be used for heating, cold water or brine for cooling.

H & B can save you money on your jacketed pipe and fitting requirements because we buy all standard size pipe from the mill in carload lots, make our own special flanges in quantities, and are tooled up for making jacketed equipment at low-est possible price. Write for Bulletin J-50.

**HETHERINGTON & BERNER INC.**  
711 KENTUCKY AVE. INDIANAPOLIS 7, IND.

When inquiring check CP 7702 on handy form, pgs. 2-3

## INSTRUMENTATION

### Simple scaler counts to 999,999...

and has sensitivity of  $\frac{1}{4}$  volt

**Uses:** Indicates and scales radio-activity counts.

**Features:** Simplified to include only minimum requirements.

**Description:** Model 180 Rediscaler has been stripped down to operating features required for usual work. Sensitivity for Geiger-Mueller input is  $\frac{1}{4}$  volt. Well stabilized high voltage supply has less than 0.05% variation for line voltage changes of 1% between 95 and 130 volts. Record is kept by a built-in counter.

Provision is made for plugging a timer into the rear of scaler. Counting capacity is 99,999 or 999,999 when the decade scale factor is thrown in.

The recovery time for unit is about 20 microseconds. It is not recommended for use in mechanical counting operations since it is sensitive enough to accept some voltage transients as signal pulses.

(Model 180 Rediscaler is a product of Nuclear Instrument & Chemical Corporation, Department CP, 229 West Erie Street, Chicago 10, Illinois... or for more information check CP 7703 on handy form between pages 2 and 3.)

### Solution concentrations are easily measured and controlled...

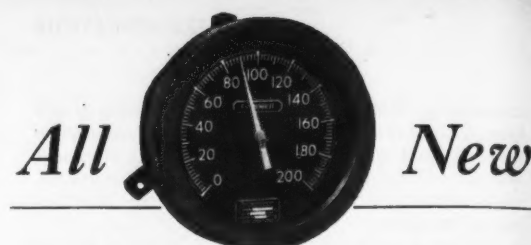
self-balancing unit requires no resetting

**Uses:** For industrial measurement and control of solution concentrations.

**Features:** Easy-to-read scale indicates solution's conductance directly in micromhos or other specified units. Unit is entirely self-balancing and does not require adjustment or resetting.

**Description:** Type RI-C Indicator-Controller is made for up to four separate electrical switches for alarm and control. In addition, air control of three to fifteen pounds per square inch for remote operation, or a combination of both electrical and air control is available.

Maintenance is simplified by plug-in chassis. Range selection



## TAYLOR 6" DIAL

shows temperature, pressure or load at a glance!

**For Temperature,** mercury, gas, organic liquid (Monolex) or vapor actuated systems to fit nearly every type of application. Ranges from minus 125°F. to +1200°F.

**For Pressure,** range spans from 12 psi to 20,000 psi are available using Bourdon springs or C springs of appropriate metals for required service.

**For Load,** standard tension and compression load elements are incorporated to use a new mercury Bourdon spring.

**New movement design** minimizes linkage errors, means more dependable accuracy throughout the range span.

**Fume and moisture proof case** may be face or flush mounted, panel or field.

**6" Dial with bold numerals and graduations** is easy to read.

**Electric alarm mechanisms,** easily and quickly adjusted—optional.

**Ask your Taylor Field Engineer,** or write for Bulletin 98214. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

**TAYLOR INSTRUMENTS MEAN ACCURACY FIRST**

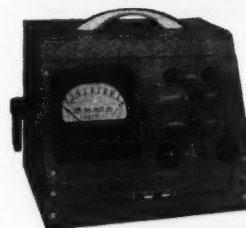
When inquiring check CP 7704 on handy form, pgs. 2-3

## EVALUATE YOUR APPLICATION FOR THERMAL CONDUCTIVITY with

## GOW-MAC GAS MASTER

OFFERING ALL THESE ADVANTAGES

- SIMPLICITY
- LOW COST
- RAPID RESPONSE
- VERSATILITY



### Engineer Your Gas Sampling System at Low Cost!

Gow-Mac units are recommended for monitoring humidity, drying tower efficiency, drying tower operation, washing tower operation, checking saturation effects from water and other liquids, observing re-activation cycles, gas mixing, gas density, leak detection, combustion efficiency, etc.

Gow-Mac instruments and cells are used by Government Bureaus, industrial and university research projects, on portable and permanent apparatus.

INQUIRIES ON SPECIFIC PROBLEMS WILL RECEIVE PROMPT ATTENTION

**GOW-MAC INSTRUMENT CO.**  
22 LAWRENCE ST., NEWARK 5, N. J.

When inquiring check CP 7705 on handy form, pgs. 2-3

CHEMICAL PROCESSING



# ACCURACY

is built into these sturdy

## MANOMETERS

### FOR QUICK, EASY READING

A Trimount Manometer for every purpose—a mounting for every installation

- Well Type Single and Multiple Tube
- U tube
- Absolute Pressure
- Micro Manometers
- Inclined Manometers
- Draft Gauges
- Indicating Flow Meters
- Liquid Level Gauges
- Electronic Level Control

Write for New Illustrated Bulletin N

# Trimount

## INSTRUMENT CO.

3119 WEST LAKE STREET  
CHICAGO 12, ILLINOIS

When inquiring check CP 7706 on handy form, pgs. 2-3



## All-Electric Floatless

### LIQUID LEVEL CONTROLS

• Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

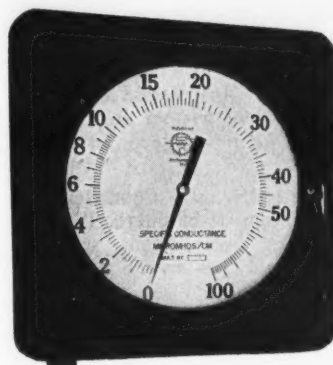
**B/W CONTROLLER CORPORATION**  
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 7707 on handy form, pgs. 2-3

## INSTRUMENTATION

plus either manual or automatic temperature compensation is provided by means of separate plug-in sub-chassis. Calibration of in-



Indicates solution concentration

strument is effected through built-in checking resistor. This resistor substitutes a known value for unknown solution resistance.

Unit is housed in cast aluminum case for either wall or panel mounting and may be purged of corrosive fumes through use of internal air pressure.

(Product of Industrial Instruments, Inc., Dept. CP, 89 Commerce Road, Cedar Grove, N. J. . . . or for more information about this product simply check CP 7708 on handy form, pages 2 and 3.)

### Gives direct reading of heat transfer

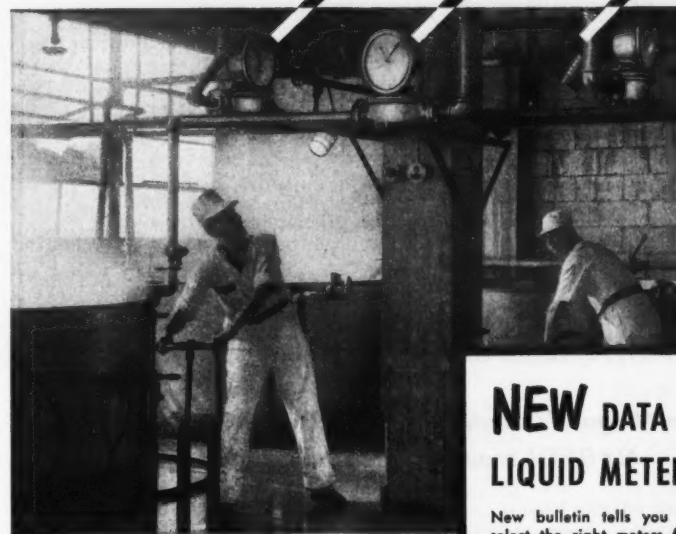
Btu meter provides direct reading of transfer of thermal energy to or from a liquid. Unit can be used in any application where a liquid is used as a heating or cooling agent and can be used to advantage wherever it is necessary to measure the number of heat units per unit of time either dissipated or absorbed.

Instrumentation Data Sheet No. 10.19-1, which describes operation and application of meter, is issued by Station 64, Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Wayne and Windrim Avenues, Philadelphia 44, Pennsylvania. When inquiring specify CP 7709 on handy form between pages 2 and 3.

## CATSUP FOR A BILLION HAMBURGERS

# Quality Controlled

## WITH NEPTUNE METERS



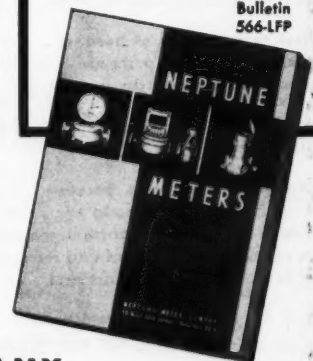
## NEW DATA ON LIQUID METERING

New bulletin tells you how to select the right meters for your process. Covers meters for handling more than 100 industrial liquids—hot or cold water, oils, syrups, brines, soap solutions, scores of chemical solutions, etc. Shows meters from 1/4" to 6"—from simple horizontal straight-readers to the newest 432 Auto-Stop automatic batching meters. A gold mine of information for processing engineers!

### Get Started Now!

Write for it—it's free. Ask for it by number:

Bulletin  
566-LFP



The G. S. Suppiger Company makes 30,000,000 bottles of Brooks catsup a year—catsup with a carefully controlled "tangy" flavor—not sweet—not biting—but "just right." Accurate measurement of liquid sugar and other liquid ingredients is vital—accurate measurement delivered to batch after batch by the fine-instrument precision of the three Neptune Meters shown above.

In plant after plant Neptune Meters are the key to quality control. They pay for themselves by eliminating spoilage, spillage, and the unsanitary muss and fuss of gauge sticks, pails or batch tanks. Use them for accurate cost accounting and inventory control, too. Positive displacement type, simple in design, quality built for sustained accuracy. Many types available for handling over a hundred different industrial liquids.

**NEPTUNE METER COMPANY**  
50 WEST 50th STREET • NEW YORK 20, N. Y.

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When inquiring check CP 7710 on handy form, pgs. 2-3



# This NEW METHOD DRIES AIR

**PRECISELY as you want it**

- ▶ to control your product's quality
- ▶ to prevent condensation on your product or material
- ▶ to prevent changes due to moist air in contact with your product
- ▶ to protect your material from dampness
- ▶ to protect your processing of moisture-sensitive material
- ▶ to DRY your material or product
- ▶ to pack or store your product safe from moisture damage
- ▶ to get exact moisture control for the precise atmosphere condition you need
- ▶ to provide precise atmospheric conditions for testing
- ▶ to increase your air conditioning capacity
- ▶ to DRY large quantities of fresh air from outdoors

**The Niagara's Controlled Humidity Method using  
HYGROL moisture-absorbent liquid is**

**Best and most effective because . . .** it removes moisture as a separate function from cooling or heating and so gives a precise result constantly and always. Niagara machines using liquid contact means of drying air have given over 20 years of service.

**Most reliable because . . .** the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions.

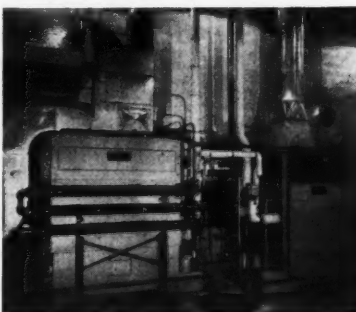
**Most flexible because . . .** you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

**Easiest to take care of because . . .** the apparatus is simple, parts are accessible, controls are trustworthy.

**Most compact, taking less space for installation.**

**Inexpensive to operate because . . .** no re-heat is needed to obtain the relative humidity you wish in normal temperature ranges and frequently no refrigeration is used to remove moisture.

**The cleanest because . . .** no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.



**Niagara Controlled Humidity  
Air Conditioning**

This method removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the leaving air. Heating or cooling is done as a separate function.

*For complete information write*

**NIAGARA BLOWER COMPANY**

**Dept. CP, 405 Lexington Ave., New York 17, N. Y.**

*District Engineers in Principal Cities of United States and Canada*

When inquiring check CP 7711 on handy form, pgs. 2-3

## INSTRUMENTATION

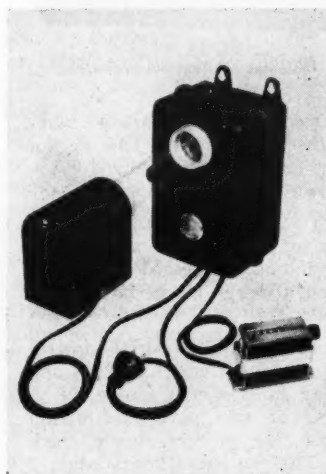
**By eliminating complex wiring, photo-counter installs fast . . .**

600 count-per-minute unit set to go when plugged in

**Uses:** Typical uses include counting packages, units on production line, etc.

**Features:** Installation requires no permanent wiring, unit is set to go when plugged in and aligned.

**Description:** Photoelectric counter consists of photocell unit containing relay, light source, and electric counter. Only equipment located at the "point of



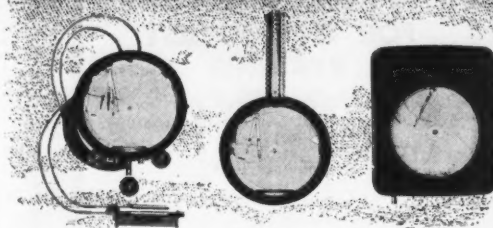
Standard unit "sees" for 6 feet

count" is photocell and light source. One or more electric counters can be placed at convenient remote locations. Counters contain their own reset knob.

Photoelectric unit has cord for plug-in connection to any standard 115 volt AC outlet. This supplies power for light source and electric counter both. Electric counters are plugged into the photoelectric unit. Output is 2 amp at 115 volts AC. Capacity is 600 counts per minute. Standard unit allows up to 6 feet between photocell and light source, special light sources are available for greater distance.

(Photoelectric Counter Set PIC is a product of Photoswitch, Inc., Dept. CP, 77 Broadway, Cambridge 42, Massachusetts . . . or for more information check CP 7712 on handy Reader Service slip, pages 2 and 3.)

## WIDEST RANGE OF EQUIPMENT FOR HUMIDITY RECORDING

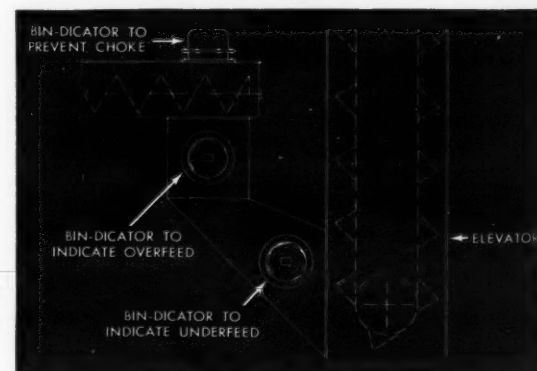


No matter what problems you face in obtaining suitable humidity measurements and records, the unique versatility of Foxboro Humidity Instrumentation offers an appropriate solution. Included are Recorders, Recorder-Controllers, Indicators, for relative humidity (hair and membrane), wet-and-dry bulb measurements, and for direct reading dewpoint or absolute humidity measurement (with the exclusive Dewcell element). Available in portable, close-coupled and long-distance types; with round or rectangular cases.

Write for full details in Bulletins 188-5 and 407. The Foxboro Company, 812 Norfolk St., Foxboro, Mass., U.S.A.

**FOXBORO HUMIDITY INSTRUMENTS**

When inquiring check CP 7713 on handy form, pgs. 2-3



## CHOKE-UPS!

**IN CONVEYORS and ELEVATOR LEGS**

damage equipment—waste materials  
cause lost time—start fires

**PREVENT SUCH LOSSES with  
BIN-DICATOR, a diaphragm operated switch**

Free catalog describes applications,  
gives details and dimensions of models  
with numerous wiring diagrams.

**THE BIN-DICATOR COMPANY**  
13946-D Kercheval Avenue • Detroit 15, Michigan

When inquiring check CP 7714 on handy form, pgs. 2-3

CHEMICAL PROCESSING

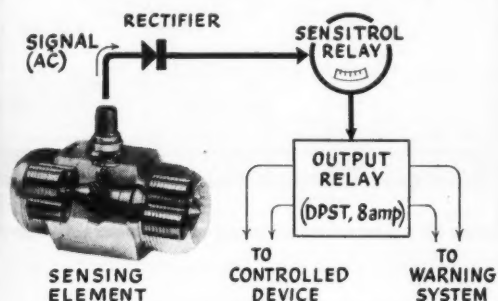
### Pressure and temperature no hindrance to alarm for flow rate . . .

it works at 20,000 psi — with liquid helium  
or fluids at 1200°F

**Uses:** Flow rate alarm system can be set to warn when flow through a pipe is exceeding any value from 1 to 250 gallons per minute. Device is also available as a minimum limiting system to warn if flow drops below a safe minimum.

**Features:** It can be used at any pressure up to 20,000 psi and at temperatures from 4° Absolute (temperature of liquid helium) to temperatures of 1200°F.

**Description:** Max-Alarm System is designed to warn when flow through a pipeline exceeds given value. Flow rate is sensed by turbine-type pickup



Block diagram shows principal parts of flow rate alarm system

element which generates an AC signal which is rectified and used to drive a Sensitrol relay. This, in turn, throws a DPST power relay having a capacity of 8 amperes at 125 volts.

Power relay can be used to operate a visual or audible warning signal, or to shut off a pump, close a control valve, etc. Signal light on panel of the instrument proper indicates when power switch is on and instrument operating. Second light on the panel flashes when flow rate has exceeded the maximum value. System includes a reset button for turning off warning light and resetting the alarm signal after necessary corrective action has been taken. This manual reset keeps system "locked-out" until operator takes necessary action, encouraging operator to seek out and correct cause of high flow rate.

Sensing elements from  $\frac{3}{8}$  to 2-inch diameter can be employed in this system directly. Similar systems for higher flow rates can be built. Sensing element can be used with toxic, viscous, or corrosive fluids, liquid gases, and other fluids which are hard to handle. The system will work with most suspensions and with many liquids containing solid particles.

("Max-Alarm" System is available with delivery at present running about 90 days. Manufacturer is Potter Aeronautical Company, Dept. CP, 87 Academy St., Newark, N. J. . . . or for more information check CP 7715 on form, pgs. 2-3.)

# VISCOSITY

DETERMINATION  
AND CONTROL

Made as Easy as . . .

A B C

Use in  
Lab, Plant  
or both



Just a flick of a switch, then read the dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, usually takes only a minute or two.

Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials. Brookfield Viscometers are portable and may have any A.C. outlet — can be used in lab, plant or both.

We're today the fully illustrated booklet showing Brookfield Viscometers and accessory equipment designed to help viscosity problems from test tubes down to 22,000 G.P.A. conditions.

These instruments range from a simple unit for routine work to a complex unit for research. They are designed to be used in a laboratory or in a plant. They are designed to be used in a laboratory or in a plant. They are designed to be used in a laboratory or in a plant.



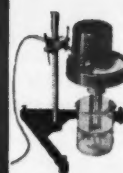
#### UL ADAPTER

When attached to LV models of the Brookfield Viscometer, the Brookfield UL Adapter, consisting essentially of a cylindrical spindle mounted symmetrically within a concentric tube, provides amplifying effects which make possible measurements to within .2 millipoises in the ultra-low viscosity range of .2 to 10 centipoises.



#### HELIPATH STAND

When used in conjunction with a suitable Brookfield Viscometer fitted with a special bar-type spindle, the Brookfield Helipath Stand lowers the rotating spindle through the test material, making possible the testing and study of highly plastic materials such as grease, putty, shaving cream, gelatin, shortening, etc.



#### LEVELING STAND

Designed to provide firm, easily-leveled support for a Brookfield Viscometer when used either by itself or equipped with a UL Adapter, the three-point screw-level base and adjustable elevation clamp of the Brookfield Leveling Stand insure fast set-ups and trouble-free determinations.

## BROOKFIELD VISCOTROL



#### Makes Possible Continuous and Automatic Viscosity Control

Based on the same simple yet highly accurate operating principles employed in the portable Brookfield Synchro-Lectric Viscometer, the Brookfield Viscotrol is designed for use where viscosity variations during production normally occur only in one direction. When installed in such tank, vat or pipe production systems, the Brookfield Viscotrol continuously measures the viscosity of the material in process. If a variation occurs, the unit automatically activates danger signals and/or other viscosity controlling devices. Write today for Data Sheet 012.

*Save Time, Labor, Dollars!*

WITH BROOKFIELD INSTRUMENTS

Precision manufacturing and sturdy design, combined with ingenious application of the old and simple principle of measuring with a calibrated spring the torque on a spindle rotating at a constant speed, have resulted in Brookfield instruments becoming the standard the world over for the accurate, fast and direct determination of viscosity and related properties. Use the convenient coupon below.

**Brookfield**  
ENGINEERING LABORATORIES, INC.  
STOUGHTON, MASSACHUSETTS

Brookfield Engineering Laboratories, Inc. A  
Stoughton, Massachusetts

Gentlemen:

Please send me the literature items I have checked below:

- ☐ Fully illustrated catalog showing all portable Brookfield Viscometers and accessories.  
☐ Brookfield Viscotrol Data Sheet 012.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

When inquiring check CP 7716 on handy form, pgs. 2-3



made right to work right

**BENDIX-FRIEZ**

high-precision thermistors

Whether you use these temperature responsive resistors in standard or special models, you can be sure of this. They'll match your needs for resistance values, size, temperature coefficient, mountings and quality. Made in our own plant under carefully controlled conditions, Bendix-Friez Thermistors know no equal.

**STANDARD TYPES FOR IMMEDIATE DELIVERY**

Size (inches)	@ +30°C.	@ 0°C.	@ -30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

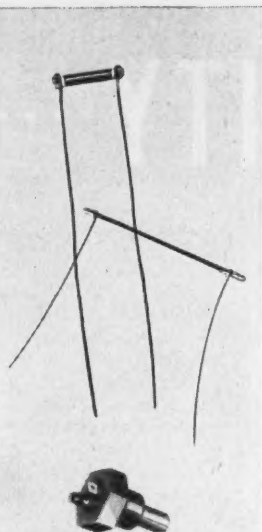
Write for details.

**FRIEZ INSTRUMENT DIVISION of . .**

1450 Taylor Avenue, BALTIMORE 4, MARYLAND

Export Sales: Bendix International Division  
72 Fifth Avenue, New York 11, N. Y.

When inquiring check CP 7717 on handy form, pgs. 2-3



Used in this typical application for sensing the temperature of hydraulic oil.



**INSTRUMENTATION**

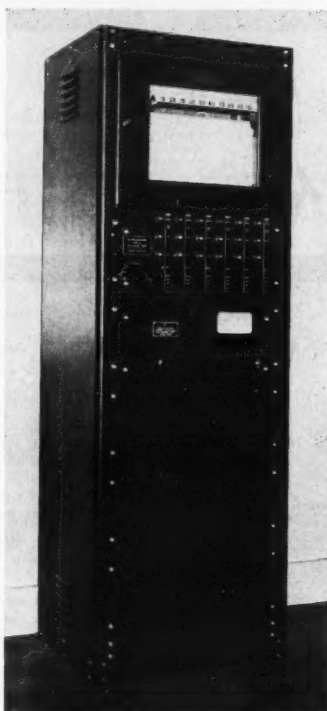
**Sixteen probes report to multipoint recorder . . .**

viscosity system can record continuously or in sequence

**Uses:** Indicates or records viscosities at as many as 16 stations.

**Features:** Sensing elements operate satisfactorily at temperatures to 650°F and pressures to 1000 psi.

**Description:** Multipoint system employs the Ultra-Viscosen sensing probe and mechanism. Probes are about the size of a fountain pen, have no moving parts. They can be permanently installed in kettles, pipelines, tanks, etc. Computer and multi-



Can be located up to one mile from sensing element

plex unit can be located up to one mile from probes, and will indicate viscosity measured by any desired probe. Automatic recording can follow one probe continuously or record all probes in sequence, using standard multipoint industrial recorders.

(Model MP Multi-probe Ultra-Viscosen has been developed by

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\* Surface, as opposed to ambient external or internal temperatures. Magnet and silicone grease supplied to affix thermometer to any surface.

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When inquiring check CP 7719 on handy form, pgs. 2-3

**Which butterfly valve better meets your needs?**

In either of these or any other valves, manual or automatic, which W. S. Rockwell builds for your exact needs, you're sure to get the right type and size to best meet the conditions of operating pressure, temperature and nature of fluid handled, whether it be air, gases, water, liquid or semi-solid chemical materials.

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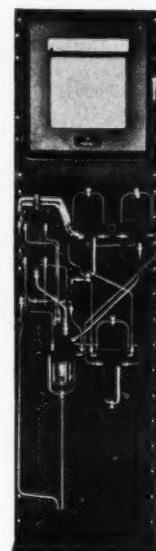
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Cambridge Gas Analyzers continuously analyze and simultaneously record on one chart from one to six constituents of a gas. They may be used for most simple and many complex mixtures of gases. Dependable and labor-saving, these Analyzers make possible increased efficiency and savings in the operation of steam generating plants, cement kilns, blast furnaces; in the production of inert gases; in metallurgy, in petroleum refining and other chemical processes.

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When inquiring check CP 7722 on handy form, pgs. 2-3

FEBRUARY, 1953

## INSTRUMENTATION

The Ultra-Viscoson Corporation,  
Dept. CP, 1240 Main St., Hartford  
3, Connecticut . . . or for more in-  
formation check CP 7723 on handy  
Reader Service slip between pages  
two and three.)

**Metal scale rolls up  
with slack U-tube  
for carrying . . .**

provides portable manometer  
for 8" to 10' differential

**Uses:** Portable slack tube man-  
ometer is available in ranges  
from 8 inches to 10 feet for  
checking field differential pres-  
sures with mercury or water.

**Features:** The manometer can  
be rolled up to carry in pocket  
or service kit, is equipped with  
convex spring-steel scale.

**Description:** Flexible slack tube  
manometer has a body made of  
vinyl plastic. It can be rolled,  
twisted, or bent into any shape  
necessary.

Unrolled, it straightens out to  
full length. Standard ranges run  
from 8 inches to 10 feet with

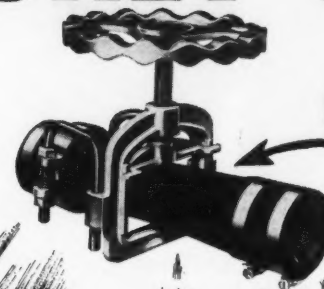


For water or mercury service

either water or mercury. Steel  
scale may be moved for zero ad-  
justment, but holds its position  
firmly when set.

(No. 1211 Flexible Slack-Tube  
Manometer is a development of  
F. W. Dwyer Mfg. Co., Dept CP,  
317 South Western Avenue, Chi-  
cago 12, Illinois. . . or for more  
information about this product sim-  
ply check CP 7724 on handy form,  
pages two and three.)

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of flexible tubing and a clamp to squeeze  
it shut. It can no more clog than a length of  
pipe. So, if you can clog one of them in normal  
service, just tell us, for the "incredible-but-true"  
record, how in the world you did it, and we'll send  
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Flex-Valves have solved thousands of valving headaches  
—in as many plants as there have been installations made. They can  
handle anything that flows, including aerated or fluidized solids. They  
close bubble-tight over 1/8" solids. Open, the flow is straight-in-line  
with the service piping, and completely unobstructed. There are no  
moving parts in contact with the lading fluid. Available in both natural  
and synthetic materials for every corrosive or abrasive service.

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flanged, and air-motor operated types are available on request. Ask for  
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**Farris FLEXIBLE VALVE CORP.**  
805 COMMERCIAL AVE. • PALISADES PARK, N. J.

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When inquiring check CP 7725 on handy form, pgs. 2-3



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...your company uses hoisting equipment in any phase of its operation! This book is more than a catalogue of the industry-leading YALE line...it is a carefully and expertly designed tool...thoroughly illustrated...scientifically developed to help you select just the right hoist for your needs. Yes, you need this book if your hoisting requirements are just an occasional lifting job or a major part of your work. Get it without obligation by completing the coupon and mailing it today.

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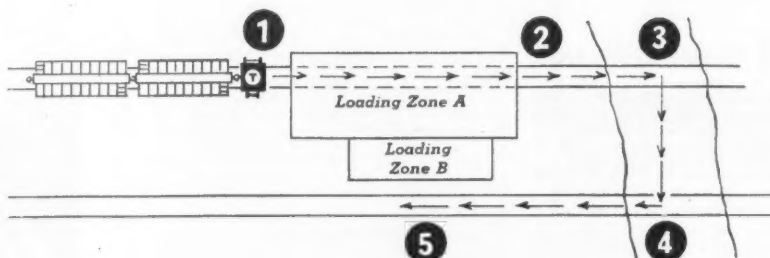
**GAS AND ELECTRIC INDUSTRIAL TRUCKS • WORKSAVERS  
HAND TRUCKS • HAND AND ELECTRIC HOISTS • PUL-LIFTS**

When inquiring check CP 7726 on handy form, pgs. 2-3

material  
handling

## Quick-Changing Wheels Allow Yard Tractor To Double As Car Spotter

While one shipment is being handled, gas-powered vehicle goes across tracks to position other loads



Track layout of Trackmobile cycle

(Fig. 2) Changeover to road wheel operation is made at the crossing by hydraulic jacking without operator having to leave his seat

CAR loading and handling has been greatly speeded at a large chemical company through the use of a gas-powered vehicle that allows car moving and spotting at two separate loading areas simultaneously.

The unit, operated by one man and capable of handling two loaded cars (25 tons net, each), can move either on a railroad track or on the ground. It can be changed from one form of operation to another in less than a minute by use of a single handle for raising or lowering a set of wheels for the purpose.

As now used at the plant, the Trackmobile has replaced the car puller formerly used in a single loading zone and has eliminated the need for any other car handling equipment. In operation throughout a 16-hr day, or double shift period, the same unit is reported versatile in emergency and special car moving jobs at many other points in the plant.

In a typical handling cycle, (See Track Layout diagram) two empty cars are taken to loading zone A; (2) the cars are moved into the building and spotted for loading, and the unit uncouples. (3) After spotting the cars, Trackmobile moves to road crossing



where it changes to road wheel operation — See Figure 2. Trackmobile then moves to adjacent track (4) and changes to track wheel operation. Flexibility of the unit permits car handling at loading zone B during 30 min period required for loading cars in zone A.

In coupling to cars and for changing from track to road wheel operation, hydraulic jacking action is used. Coupling is first done in conventional fashion, but when couplers are joined hydraulic jacking is used to raise them. This transfers part of the rail-

way car's weight onto the tractor, greatly increasing its tractive potential and enabling it to develop a maximum drawbar pull of 7350 lb. The gas-powered engine is equipped with two transmission units. One changes direction of vehicle; the other makes possible four gear ratios for travel in either direction on track or road wheels.

(Trackmobile described in this article is manufactured by Whiting Corporation, Department CP, Harvey, Illinois . . . or for more information about this product simply check CP 7727 on handy Reader Service slip between pages 2 and 3.)

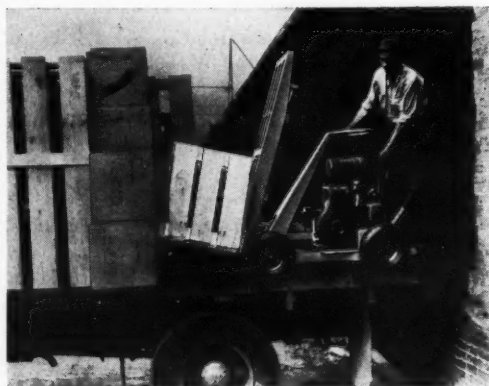
**Compactness of hand truck  
combined with speed  
of gas engine . . .**

to enable unit with operator to move through narrow aisles and crowded areas

**Uses:** For handling of boxes, barrels, drums, bags, produce, castings, machined parts. Lightweight allows its use on elevators and floors where heavy units cannot operate.

**Features:** Compact convenience of hand truck is combined with utility of power and speed of gasoline-powered materials handling truck. Small turning radius and front wheel steering enables unit to move through narrow aisles and crowded or cluttered areas.

**Description:** Driver of Xpediter rides on pedal platform, and with a single foot pedal controls forward, reverse and speed. Truck (7.5 hp) has maximum speed of 9 mph forward, 7 mph in reverse;



Compact as hand truck, versatile truck is powerful as 7.5 horses

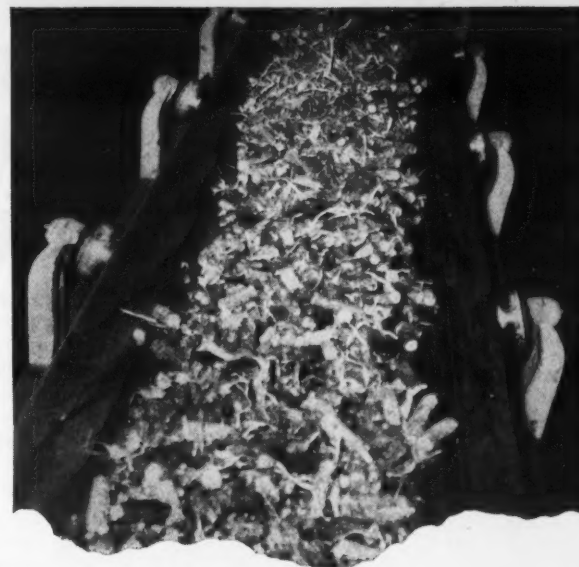
will operate in 56" aisles, turn in 68" radius. Parking brake assembly operates in oil; brake shoes have riveted lining. Truck is offered in six models — hydraulic and manual lifts — to handle materials up to 800 lb (12" load center).

A utility plate accessory 32" wide can be easily attached to barrel-handling front and has two extensions — a fixed 10-inch extension, and a hinged 24-inch extension.

(Development of Kalamazoo Manufacturing Co., Department CP, 1827 Reed Street, Kalamazoo, Michigan . . . or for more information about this product simply check CP 7728 on handy Reader Service slip between pages 2 and 3.)



# CONVEYING Systems Move CORN COBS



## Furfural Industry Utilizes Farm Wastes with Help of S-A Equipment

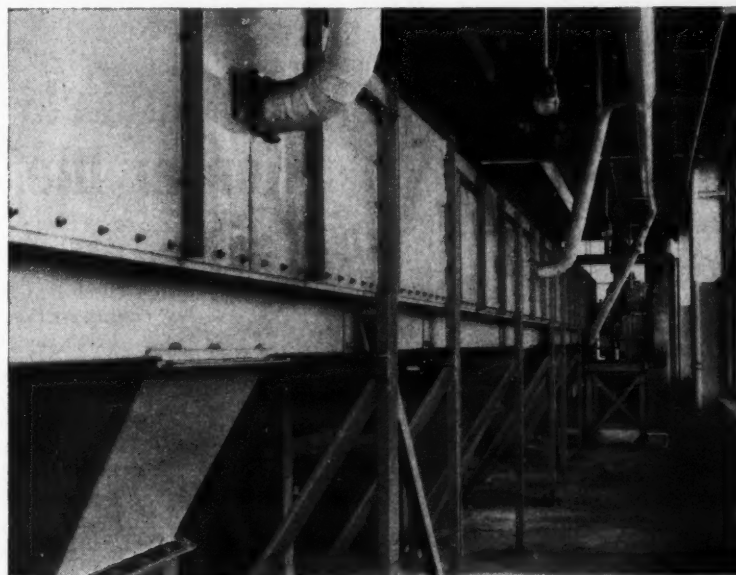
Furfural for the chemical industry . . . the production of synthetic rubber and fabrics. And S-A engineers, with S-A equipment, are helping with the handling of huge volumes of materials! . . . Whatever your materials

handling problem, you will find S-A equipment and engineering service invaluable in its solution. We are so confident of this that we urge you to put your problems before us — to write now for complete information.

This S-A designed and equipped system utilizes belt, screw and flight conveyors, as well as bucket elevators and Redler conveyor elevators. Cobs are conveyed to grinders, stored and reclaimed, screened in a rotary screen and carried to processing.

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ZIPPER Conveyor-Elevators  
Vibrating Conveyors  
Belt Conveyors  
Screw Conveyors  
Bucket Elevators  
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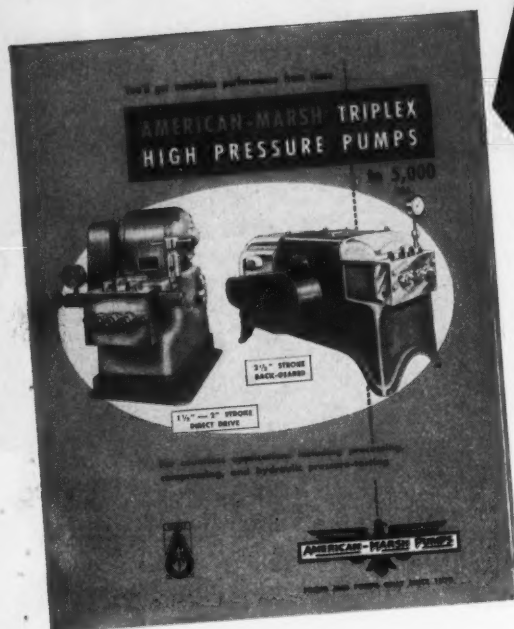
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DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 7729 on handy form, pgs. 2-3





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get this NEW BULLETIN!**

Your copy of this new bulletin on American-Marsh Triplex High-pressure Pumps is ready and waiting. You'll find it packed with useful data—dimensions, capacities, cutaway drawings—on pumps from 600 to 5,000 p.s.i. or 1.1 to 16.5 g.p.m.

Direct drive and back-gear models are described... for such uses as high pressure testing or back-washing of pipes, valves, vessels, boilers... for high pressure boiler feeding... for hydraulic presses on baling, bending, straightening, shaping, forming, laminating, die casting or pressure molding operations.

Design and plant engineers in a dozen industries have found American-Marsh Triplex Pumps trouble-free, long-lived and dependable.

They may solve a pumping problem for you—write for your copy of new Bulletin P-295.



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In Canada:

American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

When inquiring check CP 7730 on handy form, pgs. 2-3

## why "L-B" Cast Buckets give you longer life, cleaner handling



**NEXT** time you replace the buckets on your elevators, check into the money-saving advantages of Link-Belt Cast Buckets. You'll find their accurate balance and advanced design pay off in proper filling, clean discharge.

For a long, durable life — they're made of top-grade malleable iron or Promal (the stronger, longer-wearing metal) to resist abrasion, corrosion and hard usage. Smooth, seamless surface minimizes friction and wear. Corners are reinforced to give added strength.

Link-Belt builds all sizes in six different styles... for either chain or belt mounting. Complete L-B line also includes steel buckets of various designs. Contact your nearest Link-Belt office for complete information.

**LINK-BELT**  
CAST ELEVATOR BUCKETS

**LINK-BELT COMPANY:** Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.

When inquiring check CP 7731 on handy form, pgs. 2-3

## MATERIAL HANDLING

**Attachment enables fork truck to push loads into spaces it can't enter**

No manual handling is involved when load-pusher attachment for fork trucks is used to handle bulky, unpalleted loads or to load highway carriers unable to accommodate the truck because of their size. In latter application, operator pushes loads into carrier without entering it and first-in loads are moved forward in carrier by loads that follow.



Pusher arms are actuated by free-floating jack and equalized by levers. Metering valve near driver controls the amount of pushing pressure. It is reported that comparatively greater payload capacity is available with this attachment since installation of device reduces load capacity only about 10%.

(Product of The Baker-Raulang Co., Baker Industrial Truck Div., Dept. CP, 1230 W. 80th St., Cleveland 2, Ohio... or for more information check CP 7732 on handy form, pages 2 and 3.)

**Clearing winter's snow from yard doesn't present a deep problem for blade device...**

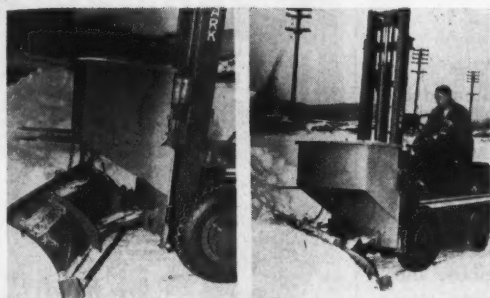
attachment can also be used for grading, backfilling, and similar light yard maintenance

**Uses:** For snow removal, but can also be used for grading, backfilling, similar light yard maintenance operations.

**Features:** Requires no tools for mounting or dismantling.

**Description:** Snow plow is a non-hydraulic attachment which is adjusted manually to several blade angles, and which is mechanically adaptable to uneven ground surfaces. Ballast box is mounted directly over truck forks. Blade assembly, 3/16" thick and 23 1/2" high, is attached to plow mounting assembly by a single vertical pin, around which blade may be rotated for angle adjustment.

Pushing blocks at base of plow assembly enable plow blade to exert maximum force at base of the snow load, where resistance is greatest. A compression coil spring acts as shock absorber. Two metal legs at the base of the plow assembly permit it to be stored in upright position. The snow



Blade has uses long after snow has gone

plow is designed for all manufacturer's pneumatic-tired fork trucks except 1000 lb Trucloader.

(Development of Industrial Truck Div., Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . or for information check CP 7733 on pgs. 2-3.)

**Any size drum or barrel can be handled by attachment for lift trucks . . .**

pick-up and release effected through raising and lowering of truck lift cylinder

Automatic attachment for fork truck will handle any drum or barrel, regardless of bead or rim size. No additional controls are required, since pick-up and release are effected by raising and lowering of truck lift cylinder. Device is attached in few minutes.

Drums can be tiered or removed at maximum fork height without use of pallets. Because there are no side clamps or projections, drums may be picked up



Drums may be tiered to maximum fork height by use of attachment

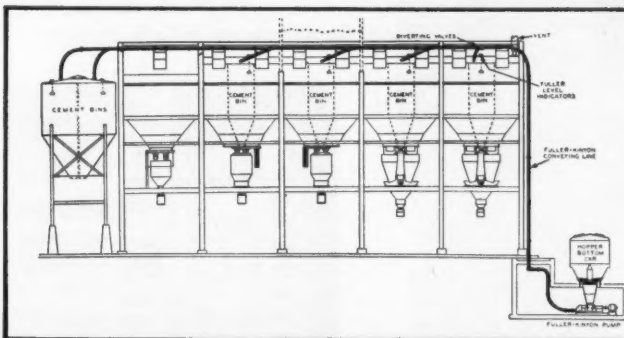
and spotted in close positions for maximum utilization of storage space. More than one attachment can be mounted on truck for multiple handling.

(Product of The Yale & Towne Mfg. Co., Dept. CP, Philadelphia 15, Pa. . . or for more information check CP 7734 on handy form, pages 2 and 3.)

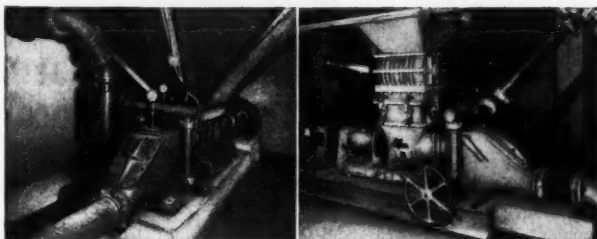
# Step Right Up

for the facts on  
DRY, PULVERIZED MATERIAL HANDLING  
using the

**FULLER-KINYON**  
CONVEYING SYSTEM



Unloading cement from hopper car; conveying to six delivery points



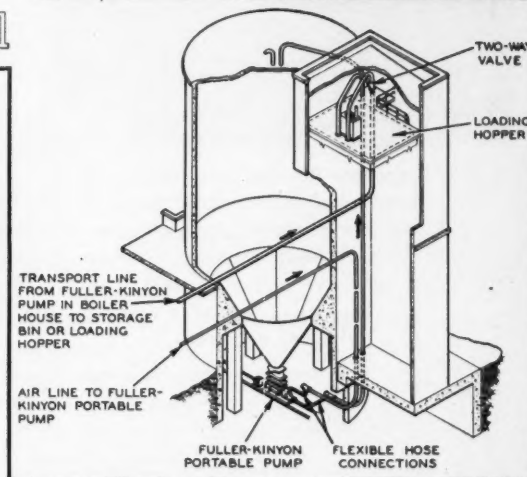
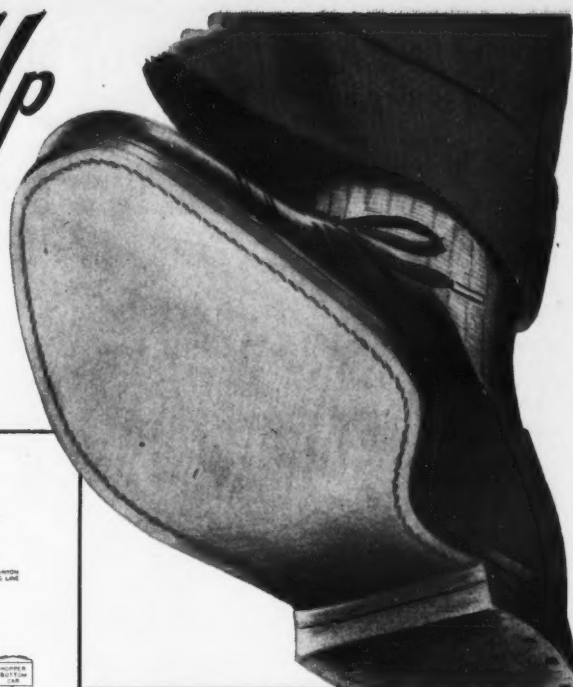
Fuller-Kinyon Stationary Pump conveying from bin to process equipment

Fuller-Kinyon Portable Pump conveying from silos to packer bins

There's an easy way to get all the facts you need to modernize outmoded and costly material-handling systems. Merely write today for specialized information on Fuller-Kinyon system applications.

Fuller Company has twenty-six years of specialized experience which has made preliminary engineering — for prospects and clients — unnecessary.

Where appropriate — a Fuller study is furnished with a comprehensive layout — including estimates. It will establish how your new system



Conveying fly ash from boiler house to storage bin; bin to car-loading hopper

can be effectively arranged to utilize your existing plant facilities economically.

So . . . "Step Right Up" . . . while your new system is just a thought. You'll get the facts about pneumatic handling of dry, pulverized, crushed and granular materials — at no expense or obligation. Write today for this helpful assistance.

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When inquiring check CP 7735 on handy form, pgs. 2-3



Want to Keep Up to Date On

## ALVEY CONVEYOR SYSTEMS



If you are the man who has the responsibility for solving materials handling problems in your company, you should be informed about Alvey Package Conveyor Systems. You are sure to benefit from the broad knowledge and wide range of experience of Alvey engineers.

If you have a problem right now, we'll be glad to work with your technical staff toward developing the best solution. If you want material for future reference, write today, giving us your name and title. We'll be glad to send you information — from time to time — no obligation, of course.

## Engineered Package Handling Systems

Everytime YOU

MUST HANDLE A PACKAGE YOU ADD TO THE COST OF YOUR PRODUCT



ALV-65

When inquiring check CP 7736 on handy form, pgs. 2-3

## MATERIAL HANDLING

**Removable tray means more space for rack storing of tubing, other coiled stock . . .**

shelf-like feature adjusts to accommodate large and small-size diam coils together

**Uses:** For storing tubing, strip, wire, and other material in coil form.

**Features:** Storage space is conserved and equipment is made more flexible through use of easily removable tray or shelf that makes it possible to place two rows of small diam coils one above the other in a conventional rack.

**Description:** No bolts or other attaching devices are employed, since shelf is of square tubular steel with welded end members. To prevent mark-



Large and small coils can be stored together

ing or marring the stock, the two longitudinal supporting rails are set at 45°. Ends of the intermediate shelf rest in U brackets welded to the uprights. Frame can be lifted out of the rack manually, making rack suitable for handling larger diam coils.

An extra cross-support at each end of rack prevents spreading of the uprights, but is low enough not to interfere with handling of the coils by rams. Racks can be handled by fork trucks or can be provided with lifting eyes for sling and hoist. Nesting caps permit safe stacking.

(Development of Equipment Manufacturing, Inc., Dept. CP, 21550 Hoover Rd., Detroit 5, Mich. . . or for more information check CP 7737 on handy form, pages 2 and 3.)

### Screen-type separator handles wide range of materials

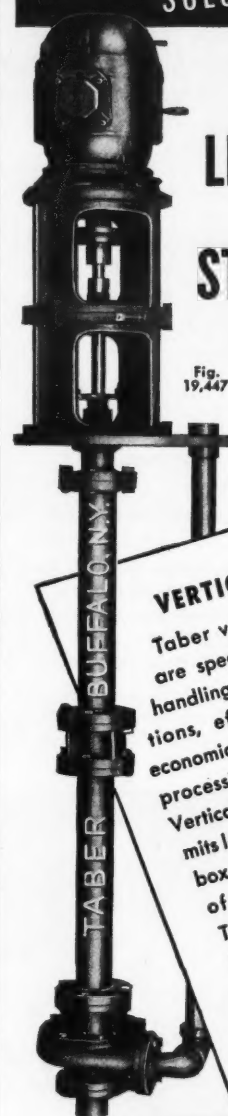
According to manufacturer, range of materials handled by screen-type separator is the broadest of any screen yet developed. Unit gives volume production through screens of fine mesh both wet and dry, from coarse to 325-mesh. No special foundation, supports, or base are required, and transferred vibrations are virtually nonexistent.

Specifications, features, and applications are listed

## for PUMPING CHEMICAL SOLUTIONS!

**NO  
LEAKAGE  
at  
STUFFING  
BOX**

Fig.  
19,447



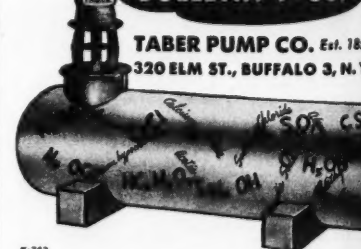
### VERTICAL DESIGN

Taber vertical pumps are specially built for handling chemical solutions, efficiently and economically . . . in the processing industries. Vertical design permits locating stuffing box above and out of liquid level. Therefore nothing to leak.

**On business stationery, we suggest you write for:**

**BULLETIN V-837**

**TABER PUMP CO. Est. 1899**  
320 ELM ST., BUFFALO 3, N. Y.



8-783

When inquiring check CP 7738 on handy form, pgs. 2-3

CHEMICAL PROCESSING

## RAIN or SHINE



**NO WATER SHORTAGE  
AT THIS PLANT**

Unfailing gravity pressure provides the constant, uninterrupted water supply that all plants require for general service needs and fire protection. The 50,000-gallon Horton ellipsoidal-bottom elevated tank above utilizes this natural law and provides water for the operation and fire protection of the Diamond Alkali Company's Houston, Texas plant.

Horton elevated steel tanks with ellipsoidal-bottoms are available in standard capacities from 15,000 to 500,000 gallons. Horton elevated tanks with radial-cone bottoms are built in standard sizes from 500,000 to 3,000,000 gallons. For quotations on steel tank installations, please write our nearest office.

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San Francisco 4	1545-200 Bush St.
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Tulsa 3	1649 Hunt Bldg.

When inquiring check CP 7739  
on handy form, pgs. 2-3

## MATERIAL HANDLING

in 8-page illustrated bulletin. "The SWECO Separator" is issued by Separator Div., Southwestern Engineering Co., Dept. CP, 4800 Santa Fe Ave., Los Angeles 58, Calif. When inquiring specify CP 7740 on handy form, pages 2 and 3.)

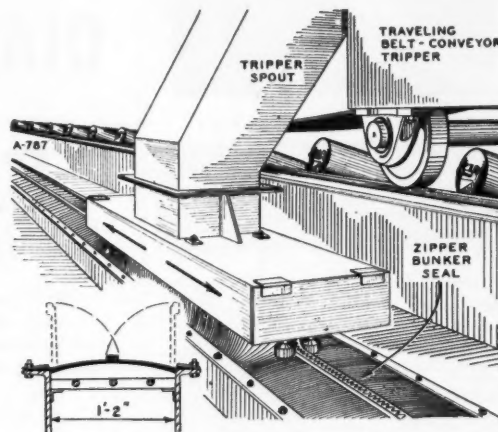
### Dust-free boiler house possible with a locking zipper for tripper spout . . .

quiet, automatic operation of bunker seal is also effective in handling other bulk material

**Uses:** For preventing dangerous dust accumulation in unloading coal or other bulky material from traveling tripper to bunker belt conveyor.

**Features:** Two narrow rubber strips with interlocking zipper fingers on adjacent edges permit a dust-tight seal over bunker top feed openings. In this way, dust is kept within the bunker, yet tripper spouts are free to operate along entire length of the bunker. Operation is quiet, automatic.

**Description:** Zipper Bunker Seal consists of two zipper-toothed seal belt strips and an opening and closing mechanism. Flat belts are fastened to opposite edges of the bunker opening, their



Stops clouds of dust from bunkers

zipper-toothed edges meshing tightly along the centerline to form a dust-proof connection. The reversible belt operating mechanism hangs from the tripper spout, with rollers at each end spreading the teeth for easy opening or closing.

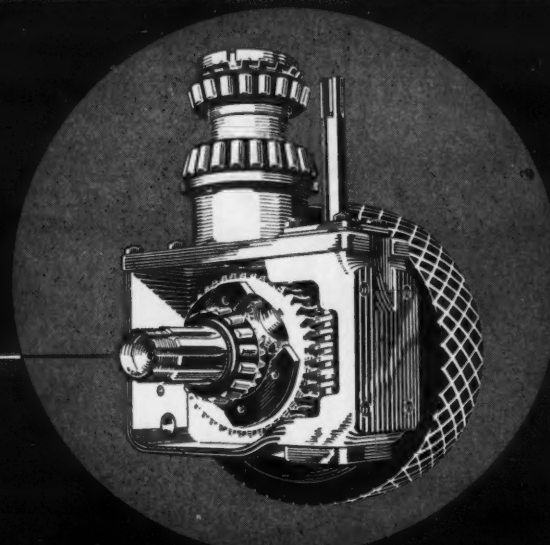
Rollers are mounted on pantograph frames to maintain proper belt contact at all times. Since the belt is open only directly under the discharge point, dust cannot escape. A metal shield on the tripper chute completes the seal.

Additional hp required to operate the seal is less than 0.2 for typical tripper speeds. Grate bars under the seal belt protect the operator from accidental injury due to stepping on or through belts.

(Development of Stephens-Adamson Mfg. Co., Dept. CP, Aurora, Ill. . . or for more information check CP 7741 on handy form, pages 2 and 3.)

STUEBING DESIGNED • STUEBING ENGINEERED • STUEBING BUILT

## Hydroelectric LIFT TRUCKS



## give you 50% easier steering

The twin front wheel drive of a HYDROELECTRIC allows the operator to make shorter turns in closer quarters with one-half the effort of conventional single drive wheels. This is much more important than having a short truck. The extreme ease of steering is obtained by the true automotive type of sealed-alloy gear transmission with opposed Timken bearings in steering column and wheels for true alignment. No troublesome chain drives . . . long life . . . less maintenance. Heat treated worm gears transmit power smoothly . . . are trouble-free for years. All gears including differential are sealed in lubricant. The entire power unit is interchangeable on all series "K" models.



Want more facts  
about this fun power lift truck?  
Write to:

## LIFT TRUCKS INCORPORATED

2423-31 SPRING GROVE AVE.  
CINCINNATI 14, OHIO

There is a model for every purpose to handle any kind of material.

When inquiring check CP 7742 on handy form, pgs. 2-3



these **LITTLE DIFFERENCES** mean

**BIG ADVANTAGES**  
when you specify

## CAMBRIDGE INDUSTRIAL WIRE CLOTH



#1. Some manufacturers assign only one operator to as many as ten looms. But here at Cambridge, we have a specially trained operator for every single loom in the plant. Just a little difference . . . but a BIG advantage in accurate mesh count and constant screen width.



#2. Some wire cloth producers can work in only a certain few metals or in a limited range of mesh sizes. Here at Cambridge we can weave cloth from any metal that can be drawn into wire . . . our range of sizes runs from 20 x 250 mesh up to 4 inch openings . . . a BIG advantage for customers with varied needs.



#3. Some manufacturers are not equipped to fabricate wire cloth into special forms, for example, filter leaves. But here at Cambridge, we can supply wire cloth in bulk or in practically any type of fabricated part . . . a BIG advantage that saves you time and money by providing one source for both weaving and fabrication.

These are just a few reasons why it will pay you to investigate Cambridge for your wire cloth needs. Call in your Cambridge Field Engineer to get the full story . . . and he'll gladly quote on your next order. Write direct or look under "Wire Cloth" in your classified telephone book.

**FREE CATALOG!** Gives full range of mesh sizes and types of cloth available from Cambridge, also valuable metallurgical data. Write for your copy today.



**The Cambridge Wire Cloth Co.**



OFFICES IN PRINCIPAL INDUSTRIAL CITIES

Department F  
Cambridge 2,  
Maryland

When inquiring check CP 7743 on handy form, pgs. 2-3

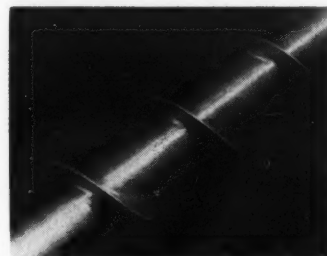
## MATERIAL HANDLING

**Continuous welding gives rigidity to stainless steel conveyor . . .**

4 to 12" screws also available in Monel, nickel, aluminum

**Uses:** Sold separately or as parts of complete systems, conveyor screws are designed for use in hoppers, troughs, feeders, spouts and drives.

**Features:** Two styles are available: a screw continuously welded to the pipe on both sides of the flight (see photo), and one that is welded at regular intervals (the "Industrial"). Screws are made of stainless steel, Monel, aluminum, nickel, bronze, steel, and others.



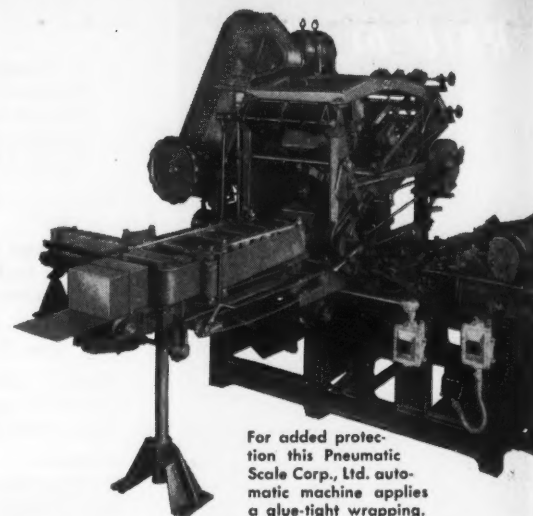
Screw conveyor is also available with intermittent weld

**Description:** Standard sections of the stainless steel screw conveyor are right hand, 6" diam, 6" pitch x 9' 10" long. Flight metal is 1/8" thick type 304 stainless steel welded to 2" stainless steel pipe bush and drilled for standard 1 1/2" diam coupling shafts, thus assuring constant, even force for conveying material.

In the Saniscrew, as shown, the continuous weld is ground and polished to a smooth, sanitary fillet. Entire screw is polished to a #4 finish. Flight surface has no lap joints or crevices to accumulate material.

In addition to the stock size of 6" right hand, all standard and special sizes from 4 to 12" are available in left hand flights. This includes variations in pitch, thickness, pipe size, length and design.

(Development of M-H Standard Co., Dept. CP, 515 Communipaw Avenue, Jersey City 4, New Jersey . . . or for more information about this product simply check CP 7744 on handy Reader Service slip, pages 2 and 3.)



For added protection this Pneumatic Scale Corp., Ltd. automatic machine applies a glue-tight wrapping.



## Dozens of DIAMOND CHAIN

### Applications on Pneumatic Packaging, Closure and Glue-Tite Wrapping Machines

● High speed automatic packaging equipment makes possible the economical and safe distribution of many products from source to ultimate user.

It is significant that on the finest types of specialized equipment of this kind made during the past half century, Diamond Roller Chains have been selected for constantly increasing numbers of applications.

Their precision and long-life dependability help materially in assuring trouble-free operating performance. Their flexibility of application helps simplify the machinery design.

**DIAMOND CHAIN COMPANY, Inc.**

Dept. 411, 402 Kentucky Avenue, Indianapolis 7, Indiana  
Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER



When inquiring check CP 7745 on handy form, pgs. 2-3

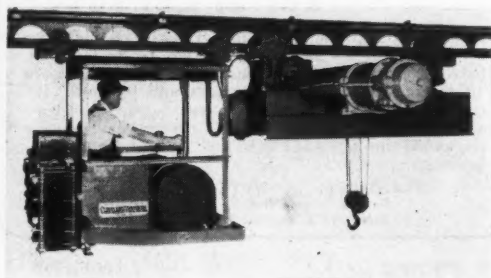
**Hydraulic scale, hoisting speed of 38 fpm among advantages of overhead carrier . . .**

limit switch operation assures clearing through openings along travel route

**Uses:** For lifting and hauling in-plant equipment and machinery.

**Features:** Hydraulic cell scale is operated by a lever to which is fastened the upper hoist block. Resulting pressure is transmitted from the cell to the scale dial (in either pounds or kilograms as may be desired) by hydraulic tubing. Scale permits the weighing of all loads handled, quickly and with a minimum of effort.

**Description:** Motor-driven tramrail carrier has a travel speed of 300 fpm, hoisting speed of 38 fpm, a lift of 36 feet. Both traveling and hoisting



Hydraulic scale shows load weight

motors are provided with variable-speed controllers. Hoisting controller is designed for dynamic lowering. Unit has 3 ton load capacity.

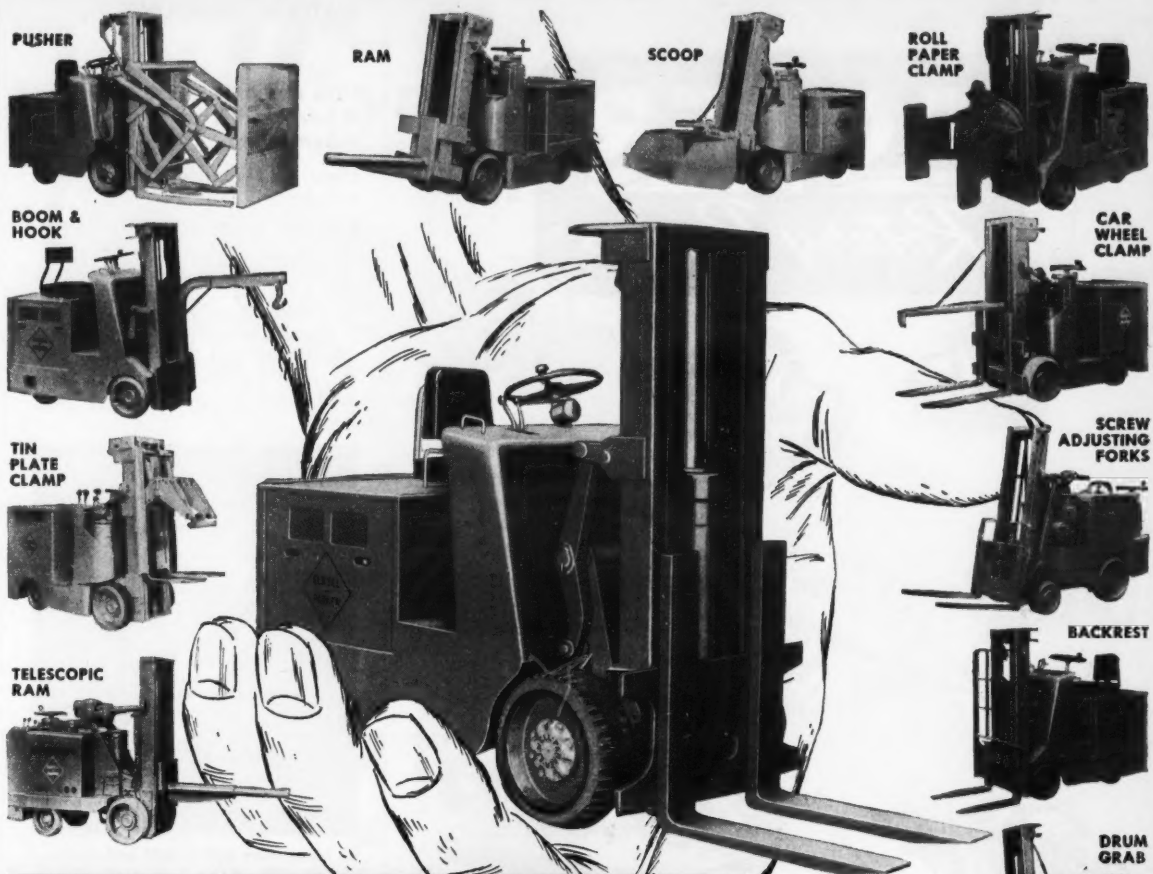
Weight-type limit switch permits operator to travel only when load block is in high position, thus assuring safe clearing through openings of limited dimensions along travel route. A screw-type limit switch is also provided for limiting distance of travel when lowering. A safety switch is provided inside the cab and travel motor is equipped with foot-controlled electric brake.

(Development of Cleveland Tramrail Div., The Cleveland Crane & Engineering Co., Dept. CP, Wickliffe, Ohio . . . or for more information about this product simply check CP 7746 on handy form, pages 2 and 3.)

**Informative bulletin concerns handling and use of cresols**

Information on the safe handling and storage of cresols, or cresylic acids, is contained in comprehensive data sheet. Sixteen-page bulletin describes precautions to be observed in unloading, emptying, handling, storage and disposal of the materials, and also discusses health hazards and their control.

To obtain Chemical Safety Data Sheet SD-48 remit 25 cents direct to Manufacturing Chemists' Association, Inc., Department CP, 246 Woodward Building, Fifteenth & H Streets, N.W., Washington 5, D.C.



# GIANT WITH 19 HANDS

One Elwell-Parker gives you the strength of a giant—more muscle power than 10 men. And giants' hands could not be more dextrous than the ingenious fork truck with attachments illustrated. They are a product of Elwell-Parker's 45 years' experience, gained while solving scores of unusual handling problems. Truly, Elwell-Parkers can be made to do almost anything but think—our engineers do that! The Elwell-Parker Electric Company, 4014 St. Clair Avenue, Cleveland 3, Ohio.

## ELWELL-PARKER POWER INDUSTRIAL TRUCKS

Established 1893

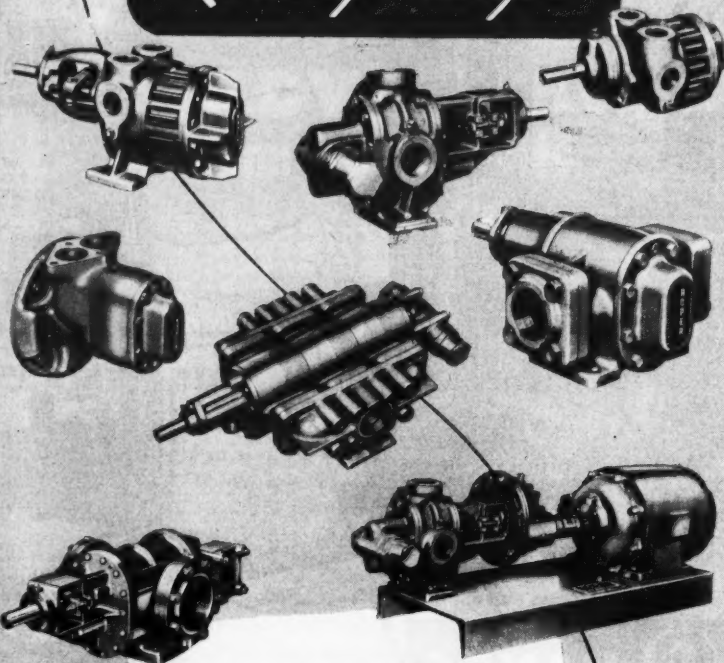


When inquiring check CP 7747 on handy form, pgs. 2-3



# ROPER

## Rotary Pumps



**THE DEPENDABLE LINE  
FOR  
HYDRAULIC SERVICE  
FUEL TRANSFER  
FUEL SUPPLY  
PRESSURE LUBRICATION  
SPECIAL APPLICATIONS**

**SERIES 3600** . . . Pressures to 60 P.S.I., sizes 40 to 300 G.P.M.  
**SERIES F** . . . Pressures to 300 P.S.I., sizes 1 to 300 G.P.M.  
**SERIES H** . . . Pressures to 1000 P.S.I., sizes 5 to 75 G.P.M.  
**SERIES K** . . . Pressures to 150 P.S.I., sizes 3/4 to 50 G.P.M.

**Special and Custom Pumps  
Designed to Specifications**

**GEO. D. ROPER CORPORATION**  
742 Blackhawk Park Avenue  
Rockford, Illinois

*Sales and Service Representatives in Principal Cities*

When inquiring check CP 7748 on handy form, pgs. 2-3

### MATERIAL HANDLING

**"On the skids" is OK  
if barrels are on  
magnesium**

**Uses:** Handling of drums and barrels.

**Features:** Reduces risk of lifting injuries, provides protection for men and equipment.

**Description:** Of welded construction throughout, all-magnesium drum and barrel skid has extreme light weight for ease of handling and with certified,



Magnesium skid is light and tough

capacity-rated strength. Skids are available in standard sizes, ranging from 5 to 18' in length. Special sizes are also available.

(Development of Magline Inc., Dept. CP, Mercer St., Pinconning, Mich. . . . or for more information check CP 7749 on handy form, pages 2 and 3.)

### Describes features of crane units

Sixteen-page bulletin lists and describes eight advantages of locomotive cranes. Features include: torque control, sealed anti-friction bearings, air controls, packaged power unit, completely automatic air-release spring-applied boom-hoist brake, air-controlled limit switch, roller bearing swing, and heavy travel mechanism gears.

Phantom view of mechanism and cutaway view of torque converter are shown. Cat 84 is issued by Orton Crane & Shovel Co., Dept. CP, 608 S. Dearborn St., Chicago 5, Ill. When inquiring specify CP 7750, pages 2 and 3.

### MODERN TIME AND COST SAVERS

**BUILT BY... Standard**  
GRAVITY & POWER  
CONVEYORS

**LIGHT  
AND EASY TO CARRY**  
*Put it where you  
need it!*



**LITEWATE  
Roller Conveyor**

Ideal for loading and unloading. Handles commodities up to 60 lbs. — moves bags, cases, hollow bottom, narrow, cleated and irregular packages. Available in 10 ft. and 5 ft. straight sections and 90° and 45° curves. Keep LITEWATE conveyors handy in your storage and shipping rooms — carry them in your trucks. Write for LITEWATE Conveyor Bulletin — address Dept. CP-23.

**STANDARD CONVEYOR COMPANY**  
General Offices: North St. Paul 9, Minn.  
Sales and Service in Principal Cities

When inquiring check CP 7751 on handy form, pgs. 2-3

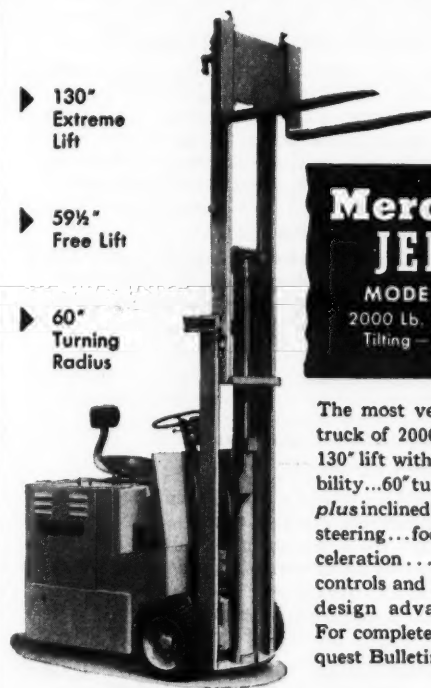
▶ 130°  
Extreme  
Lift

▶ 59½°  
Free Lift

▶ 60°  
Turning  
Radius

**Mercury  
JEEP**

**MODEL 230**  
2000 Lb. Capacity  
Tilting — Tiersing



The most versatile fork truck of 2000 lb. rating. 130° lift with ample stability...60° turning radius plus inclined automotive steering...foot pedal acceleration... convenient controls and many other design advancements. For complete details request Bulletin 295.

**MERCURY MANUFACTURING COMPANY**

4020 S. Halsted Street • Chicago 9, Illinois

When inquiring check CP 7752 on handy form, pgs. 2-3

CHEMICAL PROCESSING

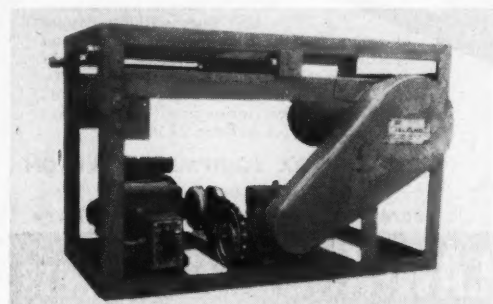
**Compact unit provides power from within 30 x 20" space for conveyors . . .**

belt speeds can be met from 5 to 100 fpm, belt widths from 12 to 36"

**Uses:** For powering belt or live roller conveyors. Idler ends are available for construction or changing gravity conveyor to belt conveyor.

**Features:** Unit measuring 30" long and 20" deep is available in belt widths ranging from 12 to 36" and in any fixed speed from 5 to 100 fpm.

**Description:** Package Power Unit contains motor, takeup roller, idler roller, drive pulley, reducer,



Keeps conveyors moving

and variable speed drive in a structural frame of formed angle steel. Motor requirements range from 1/4 to 1 1/2 hp.

(Development of Island Equipment Corp., Dept. CP, 27-01 Bridge Plaza North, Long Island City 1, N. Y. . . or for more information check CP 7753 on handy form, pages 2 and 3.)

**Emphasizes safe handling of liquid chemicals**

An additional visual aid for training small groups in correct safety practices has been announced. Dangers of liquid chemicals, their safe handling and transportation are emphasized in conveniently-bound portfolio which includes a number of colorful cartoons and illustrations.

Visual aid, known as a safety-graph, consists of portfolio which, when opened, forms an easel with cartoons and illustrations printed on audience side and safety talk printed in easy-to-read type on reverse side facing speaker.

Safety graph deals with methods for clearly identifying chemicals, how to empty drums, what to do when chemicals are spilled or splashed on workers, and measures to take when overcome by chemical vapors.

Prices for "Chemical Spills and Burns" and other safety graphs are available on letterhead request to National Safety Council, Department CP, 425 North Michigan Avenue, Chicago 11, Illinois.

**IF** your present conveyors  
aren't doing a  
**PERFECT** job—

**INVESTIGATE  
this amazing  
NEW CONVEYOR!**

If your product is too hot, sharp or oily for belt or flight conveying, or too abrasive and sticky for screw or apron conveying — if you're getting excessive spillage, or if you have cleaning problems, etc. — you owe it to yourself to investigate the Carrier Natural-Frequency Conveyor.

These revolutionary conveyors are an entirely new type of vibrating equipment which substitutes Natural-Frequency spring action for brute force. Where "brute-force" conveyors may use up to 90% of their power to operate their moving parts and only about 10% to convey their loads, the Natural-Frequency Conveyor uses substantially no more power to operate, empty, than is required to run the motor alone. Result:

**LESS POWER REQUIRED**  
(1000 foot-tons per hour per H.P.)

**LESS MAINTENANCE & DOWN-TIME**  
(Less power + good design = good service)

**GREATER CAPACITY**  
(From a dribble up to 200 tons per hour)

**HIGH CONVEYING SPEED**  
(Up to 100 feet per minute, on flat hauls)

**NO DAMPENING UNDER LOAD**  
(Designed with extra power for specified load, with positive stroke)

**SELF-CLEANING**  
(Continuous smooth trough — no pockets)

**SCREENS, DEWATERS, SEPARATES,  
BLENDS, DRIES, COOLS**  
(Combines processing with conveying)

**WIDTHS FROM 6" TO 48";  
LENGTHS FROM 5' ON UP**

(With pans 16 gauge to 1/2" plate or heavier, open or enclosed)

**BALANCED, VIBRATION-FREE  
UNITS AVAILABLE**

(For use on ceilings or light floor construction)

Carrier Natural-Frequency Conveyors (including vertical vibrating spiral types) are now being used in dozens of the largest companies in America. Write for Bulletin 119, today. Carrier Conveyor Corporation (formerly Whitley-Carrier Co.), Frankfort Avenue at Clifton, Louisville 6, Kentucky.

**CARRIER  
NATURAL-FREQUENCY  
CONVEYORS**

Carrier Conveyor Corporation  
Frankfort Avenue at Clifton, Louisville 6, Kentucky

Gentlemen:  
Without obligation, please send me Carrier Natural-Frequency Conveyor Bulletin No. 119.

Firm \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Att. Mr. \_\_\_\_\_ Dept. \_\_\_\_\_

When inquiring check CP 7754 on handy form, pgs. 2-3



**SHARP & DOHME Reports:**

## ERIEZ PERMANENT MAGNETIC SEPARATORS ASSURE CONSTANT INSULIN PRODUCTION



Extraction of insulin at the Philadelphia plant of Sharp & Dohme, Inc., starts with the grinding of beef pancreas glands. To prevent nails, bolts, wire and other tramp iron (see insert illustration) sometimes accumulated in packing and shipping of glands from getting into the pancreas grinder, two ERIEZ plate-type magnetic separators are suspended over the conveyor line. The Alnico V magnets remove tramp iron each day from the pancreas glands . . . prevent damage to the cone, worm and cutter of the grinder, and eliminate possible lay-off of men during machine downtime. Vital production of insulin at Sharp & Dohme is never stopped because of tramp iron inclusions!



Plate-type Separators, hinged for easy cleaning of ferrous contamination, remove tramp iron daily from beef pancreas processing line.

Eriez permanent (non-electric) plate-type magnetic separators, built in a full range of sizes for chemical processing lines, assure you that strength for strength . . . size for size . . . dollar for dollar . . . no ordinary permanent magnet compares!

Here are 5 features found only in Eriez permanent magnetic separators:

1. Protective cover prevents tampering and accumulation of iron on backs of castings with consequent shorting of magnetic circuit.
2. All units complete, for wood or steel installation . . . no adaptations required.
3. Continuous hinge means easy and lasting installation.
4. Powerful Hyflux Alnico V gives greatest possible magnetic strength.
5. Riveted construction adds rigidity . . . increases structural strength.



Write for FREE 16-page Catalog 15 which describes 25 different Magnetic Separators for the chemical industry.

**MANUFACTURING COMPANY**

13 Magnet Drive • Erie, Pennsylvania

**"Buy Permanent Protection . . . by ERIEZ"**

When inquiring check CP 7755 on handy form, pgs. 2-3

## MATERIAL HANDLING

**Corrosive materials  
won't affect chain  
for elevators**

designed to give from four to five times more service life

**Uses:** As a chain for bucket elevators handling corrosive materials such as fertilizers and other chemicals.

**Features:** Metal from which chain is made is reported by manufacturer to be far more resistant to acids and corrosion than cast steel or malleable iron. Other advantages claimed are: 1) longer chain life, 2) lower replacement costs, 3) less maintenance and down-time, and 4) increased production. Thickness of metal in the link barrel has been increased over 300 per cent where wear normally occurs.

Manufacturer claims that the chain is designed to give from four to five times more service life than the conventional No. C-132 chain when used for handling fertilizers and other bulk chemicals.

**Description:** The Dura-Tred Beuco-CR chain has connecting pins of heat treated alloy steel, hardened to 400 Brinell. A solid steel drive pin is used to fasten the connecting pin in the chain link side bar.

Although particularly suitable for handling corrosive products, chain is also suited for handling other bulk materials such as cement, cinders, coke, gravel, pyrites, ore, ilmenite, etc.

(Development of Chemical Handling Div., Beaumont Birch Company, Dept. CP, 1505 Race Street, Philadelphia 2, Pa. . . or for more information about this product check CP 7756 on handy form, pages 2 and 3.)

**Gives specifications  
of friction clutches**

Four-page bulletin outlines features and tabulates specifications for friction clutches and clutch couplings. Clutches are available in 10 standard sizes, ranging from 2¾ to 125 hp at 100 rpm.

Bul 2437 is issued by Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 7757 on handy form, pages 2 and 3.

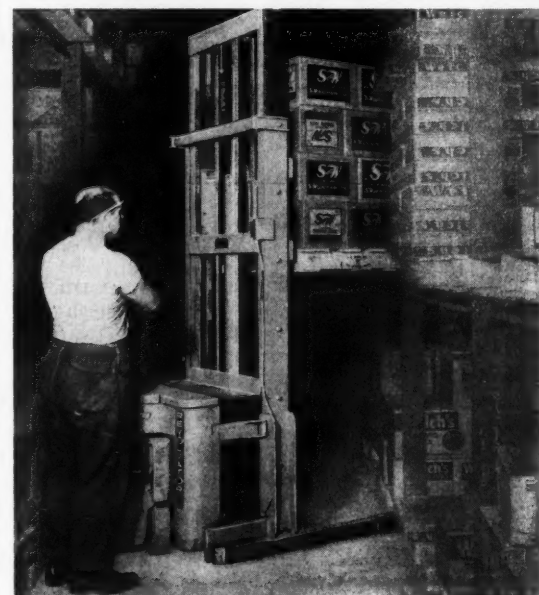


• NOW you can handle granular fines without danger of contamination! Blaw-Knox Chemical and Fertilizer Buckets are equipped with tight fitting cast chrome-nickel-molybdenum alloy steel lips to stop leakage and resist abrasion. For a detailed description on all the important features, write for Bulletin 2236.

**BLAW-KNOX EQUIPMENT DIVISION**  
of Blaw-Knox Company  
2076 Farmers Bank Building, Pittsburgh 22, Pa.

**BLAW-KNOX CLAMSHELL BUCKETS**  
FOR CHEMICAL AND FERTILIZER PLANTS

When inquiring check CP 7758 on handy form, pgs. 2-3



**FINGERTIP CONTROL—Revolver Go-Getter—telescopic straddle type lift truck—a bear for work in crowded areas, narrow aisles. Fully automatic—extraordinarily maneuverable 200° turning arc—2500 lb. capacity—very slight operator training necessary. Write for full details of this and many other models.**

**REVOLVATOR CO.** 8790 TONNELE AVENUE  
NORTH BERGEN, N. J.

When inquiring check CP 7759 on handy form, pgs. 2-3

**Up to 2 tons can be supported  
on all-steel industrial  
trailer 3' x 5'2" . . .**

load moves on roller bearing wheels, brake device gives greater control on grades

**Uses:** For handling of palletized loads, but unit can also be used for general hauling tasks by industrial trucks. They can be used individually as hand trucks.

**Features:** Combination hand truck trailer has 4000 lb capacity, is equipped with simple brake mechanism in order to permit safer operation on grades.

**Description:** Standard model (#A-310-326M) all-steel hand truck trailer is 36" wide, 62" long, has flush deck 13" from the floor. Brakes are



Brake mechanism means more control

of the external contracting type. Spring-loaded shoes bear on the two rear load wheels when brake is applied by hand-operated lever on caster-end pipe rack. Couplers at each end are self locking. Unit has roller bearing mounted wheels, of the "molded-on," solid rubber type.

(Development of Mercury Manufacturing Co., Dept. CP, 4044 S. Halsted, Chicago, Ill. . . . or for more information check CP 7760 on handy form, pages 2 and 3.)

**Heavy man-hour losses are result  
of inefficient material handling**

Illustrated booklet points out how inefficient material handling severely handicaps successful production. Utilizing a "western-style" pictorial presentation of the five major causes of heavy man-hour losses and four basic plant operations where such losses are most often sustained, booklet outlines reasons for these losses in graphic presentation.

"How to Catch Man-Hour Thieves" is issued by Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio. When inquiring specify CP 7761 on handy Reader Service slip between pages 2 and 3.

# NEW ACCESSORIES

★ ★  
**make**



Model R

## VERSAVEYOR

Bag and Box Handler

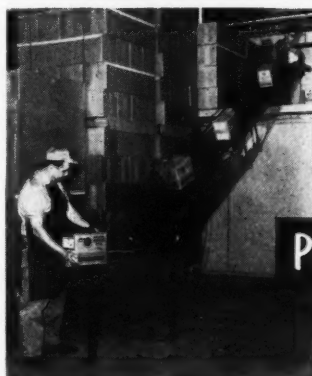
**more versatile . . .**



The Belt Model R Versaveyor saves time and manpower moving and stacking, loading and unloading.

Now optional equipment, just developed, makes this handy unit able to adapt itself to even more handling tasks in the factory and warehouse. Gravity and powered sections are now available for both feed and discharge end. New attachments make it easy to link the Model R Versaveyor into your gravity conveyor system. Support stands provide firm anchorage whenever needed for floor-to-floor applications. Many other accessories. Write for detailed literature.

### Select "Extras" to Fit Your Needs



Versaveyor carries material into storage loft, reduces handling time between floors.

### Put Thrift in Every Material Shift

Plants of all sizes are putting the Belt Versaveyor "on the payroll" to speed up handling, slow down costs. Review your handling and storage operations, then step up efficiency with one or more Versaveyors. Lengths to 25 ft. Distributed loads to 300 lbs. Unit loads to 150 lbs. Wt. of 13-ft. length approximately 200 lbs.



## THE BELT CORPORATION

7502 Stahl Rd.

Orient, Ohio

When inquiring check CP 7762 on handy form, pgs. 2-3



# NOW!

## 12-FOOT TUBES

### of IMPERVITE

### Impervious Graphite!



and  
**FALLS**  
is **FIRST**  
**AGAIN, with**

heat exchangers that  
give you 33 1/3% more surface  
for **ONLY 15% added cost!**

Have you received  
your copy of the  
complete Impervite  
Catalog?

BECAUSE Falls Impervite (Impervious Graphite) pipe is made in our own associate plant, and  
BECAUSE this modern plant was carefully planned with the future of the processing industry in mind, and  
BECAUSE since production started last year its engineers have perfected their development of super-length graphite extrusions . . .

THEREFORE, this company takes considerable pride in being the first to supply a long-felt need in this industry . . . 12-foot Impervite (impervious graphite) tubes, making possible the production of heat exchangers having obvious advantages over the former maximum standard lengths.

## Falls Industries, Inc.

AURORA ROAD SOLON, OHIO

When inquiring check CP 7763 on handy form, pgs. 2-3

### MATERIAL HANDLING

**Quick-change clutch is  
lift truck feature  
in gas model . . .**

torque drive is optional; electric units travel at 6 mph

**Uses:** For general materials handling requiring fork lift trucks in the 6000 to 7000 lb range.

**Features:** New fork mounting allows free lift of 25" in both gas and electric models. A quick-change clutch is standard on the gas-powered model; Dynatork Drive is optional. Travel speed of the electric unit is six miles per hour.

**Description:** In the new model Utilitrucs, both gas or electric powered, maximum accessibility is provided to engine compartment or motors and controller.



Also available with battery power

Controls have been placed within easy reach of the driver, and on the gas models all the instruments including starter button and ignition switch, are in a dash panel on the steering column. Cushion-type tires are standard with either power type, help prevent general driving fatigue through easier riding, steering, and better traction.

In the electric model, manufacturer claims lifting speed has been increased 12 to 16 per cent. Automatic acceleration eliminates jerking starts, protects motor from abusive application of power. Side removal of battery speeds servicing. Drive motor and pump are totally enclosed for maximum protection against dust and dirt.

(Development of Industrial Truck Div., Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . or for more information about the product check CP 7764 on handy form, pages 2 and 3.)

### What do You Need?

Order direct—get  
catalog and prices

**"Metalsmiths"**  
**Stainless Steel  
and Monel  
Utensils**

Prompt shipment  
—anywhere!

We've shipped "Metalsmiths" corrosion-resistant utensils all over the world for more than 30 years, with utmost satisfaction. Highest quality materials and workmanship assure long wear. All items shown, plus beakers, stock pots, batch cans and shovels, in stock. Buy, try, compare!



WRITE FOR LATEST CATALOG — PRICE LIST



## METALSMITHS

Division of Orange Roller Bearing Co., Inc.  
536 White Street Orange, N.J.

When inquiring check CP 7765 on handy form, pgs. 2-3

### "TELL 'EM ABOUT OUR OTHER MAGNETIC SEPARATORS"



Said the boss: "Folks will think from our ads that the grate is the only magnetic separator we make. Tell 'em about the others."

So we're illustrating our Triple-Air-Gap and Single-Air-Gap chute models and our Portable model.

The air gaps in the chute models are troughed. Rolling pieces of steel, such as nuts and ball bearings, drop into the recesses. There they are stopped dead by magnetic force.

Iron and steel pieces hop out of flowing materials to impinge upon the Portable Magnet mounted over a picking table or belt.

The Magnetic Grate is placed in a hopper bottom or floor opening to catch the tramp iron in dumped or shoveled material.

Get all the details in Bulletin M-3-A

## THE BAUER BROS. CO.

1728 SHERIDAN AVE. • SPRINGFIELD, OHIO

When inquiring check CP 7766 on handy form, pgs. 2-3

## MATERIAL HANDLING

**Loads of 1000 lb are lifted 5' at 11 fpm while batteries supply power . . .**

one man can operate hydraulic drive with stop-start pushbutton controls

**Uses:** For handling of crates, boxes, barrels, drums, pallets, and difficult materials of an awkward nature.

**Features:** Lifting device is capable of lifting 1000 lb loads at 11 fpm rate. Machine has self-contained battery-hydraulic power.

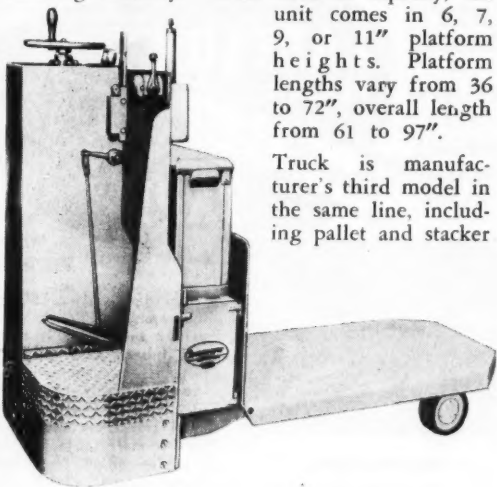
**Description:** Equipped with automatic stops and pushbutton controls, the Hydra-Powlift can be operated by one man. The battery has a 6 v electric hydraulic drive. Unit measures 81" high, 32" overall width, and lifts up to 60". Lowering height is 5 1/2". Platform is 24 x 24". Battery charger is included with each machine.

(Development of the Langley Mfg. Co., Dept. CP, 955 Cambridge St., Cambridge, Mass. . . or for more information check CP 7767 on handy form, pages 2 and 3.)

**Riding-type truck has 2-ton capacity on platform, works 6' aisle**

Compact, lightweight, maneuverable Transveyor, a riding-type electric platform truck that permits 6' aisle operation has been offered to materials handling industry. With 4000 lb capacity, the unit comes in 6, 7, 9, or 11" platform heights. Platform lengths vary from 36 to 72", overall length from 61 to 97".

Truck is manufacturer's third model in the same line, including pallet and stacker



Can maneuver 2 tons in 6' aisle

trucks. All Transveyors feature four-wheel construction with compensating suspension to provide load equalization on both front wheels, regardless of floor conditions.

(Development of Automatic Transportation Co., Dept. CP, 149 West 87th St., Chicago 20, Ill. . . or reader may secure more information about this product by simply checking CP 7768 on handy form, pages 2 and 3.)

**HAPMAN  
REPRESENTATIVES  
LOCATED IN  
ALL PRINCIPAL CITIES**

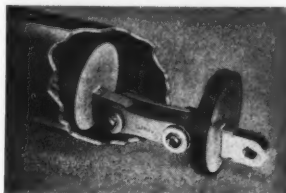
**HAPMAN CONVEYORS, INC.**  
DIVISION OF HAPMAN-DUTTON COMPANY  
605 GIBSON ST., KALAMAZOO, MICHIGAN

**Hapman**  
PATENTED  
CONVEYORS

**Hapman Tubular Conveyors Move Almost Any Flowable Material —  
Wet or Dry—Through Any Plane or Angle**

### WHAT THEY ARE:

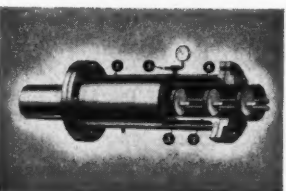
Hapman Conveyors consist of solid circular flights of Neoprene (or special materials), mounted at intervals on special, sealed-pin chain or wire cable operating within standard pipe or tubes.



Rubber flights move dozens of materials through standard pipe.



Flight flanges interlock, covering wire cable.



Permits processing under vacuum or pressure while "on the move."

### WHAT THEY DO:

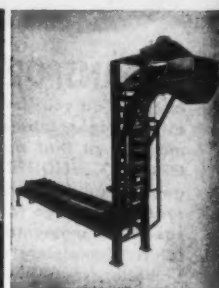
They move almost any powdered, granular and semi-liquid material at speeds up to 100 feet per minute — in single runs up to 300 feet long — through any plane or angle — with minimum clearance and outside support.

### HOW THEY'RE APPLIED:

Often they're used where sanitation is vital. They are dust proof, liquid-tight, odor-confining, self-cleaning. For carrying corrosive and non-corrosive chemicals, foodstuffs, abrasives, sludges.



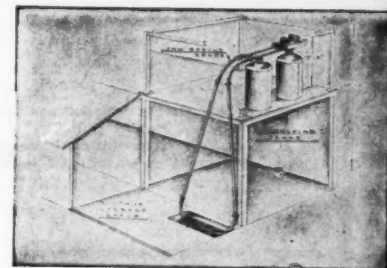
Hapman CABLE-VEYOR can be used on food processing equipment. Flour is carried to this bakery unit.



Pivoted Bucket carrier — various layouts possible — for handling fragile materials, crystalline, etc.

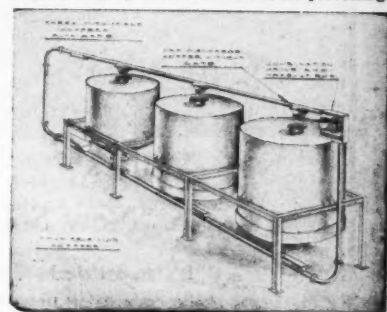
**HAPMAN SEALED-PIN CHAIN CONVEYOR**—Incorporates compressed synthetic rubber washers to seal link-pins from abrasion of conveyed materials. Flexible chain twists to follow bends in pipe. Circular flights are usually of abrasive-resistant synthetic rubber, bonded between steel plates, with rigid, sanitary surfaces. For high temperature or corrosive conditions, flights may be cast iron, stainless steel, fibre, etc. Hapman Vibrators assure discharge of powdered materials. Conveyors are quiet, self-cleaning. Power consumed is low.

**HAPMAN CABLE-VEYOR**—Developed particularly for handling certain foods and chemicals. Consists of regularly spaced circular flights mounted on sheave-driven wire cable. Flights are convex, with extended flanges which interlock with flanges ahead and behind, providing continuous cover for the cable. Oversize flights with flexible edges may be mounted at intervals to clean the inside surface of tube. Synthetic rubber or plastics are usually specified for flights, depending upon the application.



Hapman Conveyor feeds into tanks for processing.

**HAPMAN PNEUMATROL SECTIONS**—May be included in conveyor to permit continuous, simultaneous feeding and processing of flowable materials under pressure or vacuum. Two Pneumatrol sections required to confine pressure or vacuum to one part of conveyor.



Note multiple discharge points of this conveyor for abrasive material.

### YOU CAN HANDLE ALL THESE MATERIALS AND MANY MORE:

#### Bulk Chemicals:

Powdered, granular, crystalline, semi-liquids — at high or low temperatures. Corrosives or other. Radioactive wastes. Pharmaceuticals.

#### Powdered Material:

Baking flour  
Starch  
Powdered sugar  
Resins  
Talc  
Coal  
Malt

#### Abrasive Dusts:

Clay  
Aluminum Oxide  
Foundry sand  
Emery dust  
Ceramic powder  
Cupola slag  
Cast iron dust

#### Sludges from:

Settling tanks  
Quench tank scale  
Spent grains and hops  
(Breweries)  
Processing vats

### HAPMAN ENGINEERING SERVICE AND TEST EQUIPMENT AVAILABLE

Test Conveyors are available at the factory or for shipment to your plant, in case unusual conditions actually require "on the spot" testing of your material. Hapman Conveyors are individually engineered to your job. Send details of your problem to Hapman for analysis and estimates by experienced engineers. Write for complete catalog.

### THESE INSTALLATIONS MAY SUGGEST SOLUTIONS FOR YOUR BULK HANDLING AND FEEDING PROBLEMS:

(Scores of other materials successfully handled.)

American Cyanamid Co. . . Sodium Chloride  
Dow Chemical . . . Pressurized Feeders  
Upjohn Company . . . Powdered Clays  
Lever Brothers . . . Rinso Soap Powder  
Shell Oil Company . . . Spent Filter Clay  
Crown Cork & Seal Co. . . Ground Cork  
Stroh Brewery . . . Wet Spent Grain  
Helms Bakeries . . . Flour Handling  
Goodyear Tire and Rubber Co. . . Carbon  
Johnson and Johnson . . . Talc Handling  
Centilivre Brewing Co. . . Malt and Grain

When inquiring check CP 7769 on handy form, pgs. 2-3



## Make your Belt Conveyor a **WEIGHING** Conveyor!

### A TRANSPORTOMETER®

installed on your belt conveyor system continuously weighs, totalizes and records the flow of material at that point. THE ONLY TRUE INTEGRATING WEIGHER — Completely mechanical, gear differential integrator records on a direct-reading tonnage totalizer, the product of belt speed and momentary weight on the suspended idlers. Completely automatic. Accuracy 99½% or better, regardless of belt speed or tonnage variations. Easily installed. Complete TRANSPORTOMETER unit supplied ready for mounting without changing existing conveyor structure. Negligible wear with lowest maintenance cost of any comparable equipment.



*Some of the Materials  
Weighed by the ...*

### TRANSPORTOMETER

Asbestos	Paper Pulp
Cement	Sand and Stone
Chemicals	Sewage Sludge
Coal and Coke	Soap Powders
Coffee Beans	Sugar
Flour	Sulphur
Fruits	Super Phosphate
Ores	Tobacco

Bulletin tells how the TRANSPORTOMETER can improve your processes by faster, more accurate weighing and totalizing, via belt conveyors.



### TRANSPORTOMETER DIVISION

## SINTERING MACHINERY CORPORATION

150 SINTER AVENUE, NETCONG, N. J.

When inquiring check CP 7770 on handy form, pgs. 2-3

## What's A "New Solution"?

It's an article in **CHEMICAL PROCESSING** describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

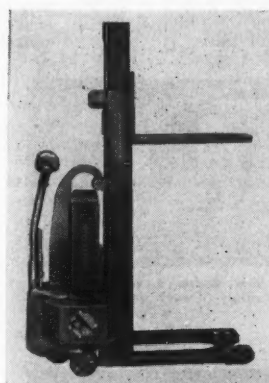
Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

## MATERIAL HANDLING

**High stack or low lift  
is done in 6' aisles  
with 48" loads . . .**

four units designed in rider or "walkie" styles

Four lift truck models, in both rider and "Walkie" designs, and each capable of handling a 48" load in a 6' aisle, are now being offered by manufacturer. The



Maneuvers loads in 6' aisles

Model M, a 3000 or 4000 lb capacity riding type outrigger fork truck will stack 10½' high and travel up to 4 mph. Low lift truck transports load and operator.

Where long hauls are not involved, the Walkie models are recommended. Like the riding type Model M, the JackStacker and JackLift electric Walkies with capacities to 6000 lb also stack or maneuver in 6' aisles. Both models and both of the power Walkie trucks are manufactured in either pallet or platform types.

(Development of Lewis-Shepard Products, Inc., Dept. CP, Watertown, Mass. . . or for more information check CP 7772 on handy Reader Service slip, between pages 2 and 3.)

### Strong arm of crane reaches out for 'hidden' load

**Uses:** For general materials handling into or out of storage, for moving and handling heavy parts, loading and unloading motor trucks and freight cars, and for assembling or dismantling.

**Features:** Speeds movement of material being handled, saves man-hours, and provides a safer

## Another Tough Material Handling Problem— Solved by **HAMMOND** Screw-Lift



Installation at Ronsoni Macaroni Co., plant in Brooklyn — one of America's largest Macaroni manufacturers.

**Features:** Dust-tight, compact, fast, clean. Saves space, offers easy access to interior of conveyor — requires a minimum of operating labor.

Hammond Horizontal Screw-Veyor coupled with Screw-Lift makes a fast, clean job out of a cumbersome, slow and costly hand operation — taking Macaroni Flour from receiving point and conveying and distributing it to storage tanks a considerable distance away. Results — Production considerably increased and the job accomplished efficiently which no other type of conveyor could equal in performance. All horizontal conveyor is drop bottom type enabling frequent cleaning to comply with rigid health inspection.

Write for Form No. M-500-2 and M-600-2



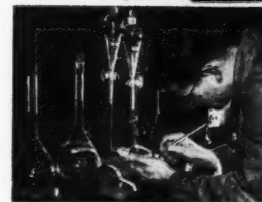
When inquiring check CP 7773 on handy form, pgs. 2-3

**WON'T  
SMUDGE  
•  
RESISTS:  
DIRT  
GREASE  
WATER  
ACIDS**

## LABELON PLASTIC

*Write on it*  
**TAPE**

**STICKS  
WITHOUT  
MOISTENING**



**FOR RESEARCH,  
DEVELOPMENT,  
STORAGE, OFFICE**



Write to Dept. CP

Nothing else like LABELON—the amazing "Write on it" plastic tape! Use it to mark test tubes, glass vessels, test batches, specimens . . . to identify circuits, panel boards, fuel lines, instruments . . . to label stockroom shelves, bins, hard-to-mark objects. Ideal, too, for office files, folders, stored records, etc.

LABELON TAPE sticks without moistening to any smooth, clean surface — yet can be quickly removed. Resists heat up to 160°. Just write on it with pencil or stylus—message won't smudge. Choice of widths and colors. Handy dispenser with cutter bar.

See your nearest dealer or write for sample and prices.

**LABELON TAPE CO., INC.**  
450 Atlantic Ave., Rochester, N. Y.

When inquiring check CP 7774 on handy form, pgs. 2-3

HCl H<sub>2</sub>SO<sub>4</sub> NaOH  
HF H<sub>2</sub>O<sub>2</sub> Ca(OH)<sub>2</sub>  
FeCl<sub>3</sub> DISTILLED H<sub>2</sub>O  
**IS THIS YOU?**

## FOR TROUBLE-FREE PUMPING OF HIGHLY CORROSIVE FLUIDS



Check These Vanton Advantages

- ✓ **FLUID NEVER TOUCHES METAL** . . . only outer surface of "flex-i-liner" and inner surface of body block.
- ✓ **NO STUFFING BOXES**
- ✓ **NO VALVES . . . NO GASKETS.**
- ✓ 35 correct combinations of rubber, synthetic and plastic flexible liners and pump body blocks . . . inert for most applications.
- ✓ **Self priming . . . self-lubricating.**
- ✓ **EXCELLENT FOR ABRASIVE SLURRIES**

Widely used in chemical, food, pharmaceutical, etc. Industries.

Available from fractional to 20 G.P.M.-Vinyl and Compar  
"flex-i-liners" also available in pumps to 5 G.P.M. capacities.

**VANTON PUMP CORP.**  
Empire State Bldg. CP2 New York 1, N. Y.

When inquiring check CP 7775 on handy form, pgs. 2-3



## Finnegan Can Keep 'Em Rolling!

There's no more "Off Agin . . . On Agin . . .  
Gone Agin . . . Finnegan" when you operate

### ABBÉ JAR ROLLING MACHINES

The machine keeps on rolling when the time comes to take off or put on small jars. Even with large jars, when the machine has to be stopped, jar changes take only a few seconds . . . there are no time consuming unstrapping and adjustments.

Each jar gets its full grinding cycle and is quickly removed when finished. The rest of the jars on the machine are not affected. And you can use jars of different sizes, too.

*If you want to save time and labor on jar grinding, ask for Bulletin #63 on Abbé Jar Rolling Machines.*

**ABBÉ ENGINEERING CO.** 46 CHURCH STREET  
NEW YORK 7, N. Y.  
Makers of  
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 7776 on handy form, pgs. 2-3

FEBRUARY, 1953

## MATERIAL HANDLING



Crane lifts loads out of hard-to-reach places

method. If object is inaccessible, crane reaches over rows of piled material and picks it up, eliminating need of moving several units.

**Description:** Capacities of cranes range from 500 to 5000 lb. Plain crane hooks are standard equipment, but special grapples are available. Cranes may be hinged or telescopic, operated either manually or by electric power. Cranes are equipped with anti-friction bearings and are obtainable with any required lifting height, fixed boom or revolving base of any practical length.

(Development of Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago, Ill. . . . or for more information check CP 7777 on handy form, pages 2 and 3.)

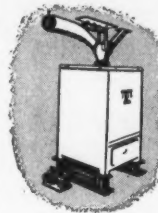
### Pictures attachments for industrial trucks

Illustrated bulletin shows features and uses of more than 25 attachments for use with powered industrial trucks. Designed to increase efficiency of trucks and to enable one truck to do the job of many, attachments described in bulletin include revolving forks, roll paper clamp, hook and boom, electromagnet ladle pourer, remote control, upender, etc.

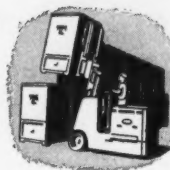
Bulletin describing truck attachments is issued by The Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio. When inquiring specify CP 7778 on form, pgs. 2-3.

# TOTE

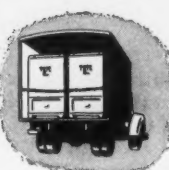
... a **COMPLETE SYSTEM** for  
handling bulk materials



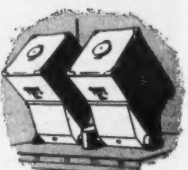
**FILL**  
Automatically



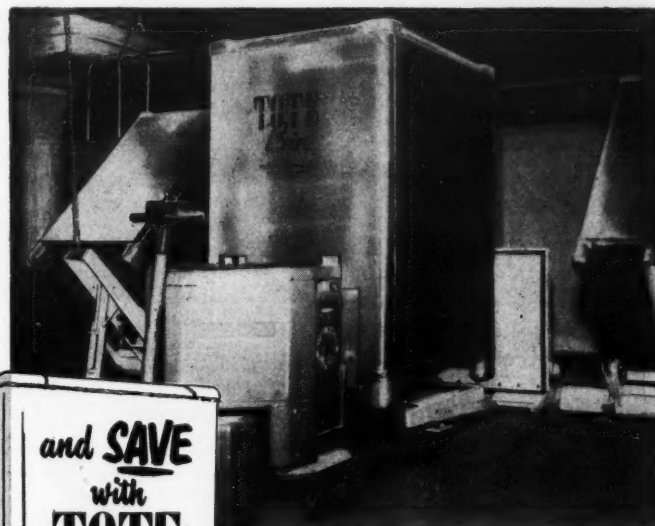
**STORE**  
Economically



**TRANSPORT**  
Easily



**DISCHARGE**  
Automatically  
BATCH-WEIGH or BLEND  
Accurately



- Save time and labor costs
- Save container costs
- Save storage costs
- Save losses due to weather and deterioration
- Save losses due to spillage, sifting and dusting
- Save losses due to rodent and insect infestation
- Save original product quality

### EQUALLY EFFECTIVE FOR INTER-PLANT OR IN-PLANT OPERATION

**Tote System**—built around aluminum bins plus automatic filling and discharging equipment—is now in use in many industries handling a variety of products, both liquid and dry. They include flour, sugar, cocoa, soaps, detergents, polystyrenes, ethocel, phthalic anhydride, whitening, cement and phosphor powders.

In many instances, the savings effected in **JUST ONE YEAR** through Tote System have more than paid for the cost of the installation.

Tote engineers will survey **YOUR** plant to determine the savings **YOU** can effect, at no cost or obligation.

Write for detailed information.

\*Tote and  
Tote System  
Reg.  
U. S. Pat.  
Off.

**TOTE SYSTEM, INC.**

680 So. 7  
BEATRICE, NEBRASKA

When inquiring check CP 7779 on handy form, pgs. 2-3



# CLARK 1953

## POWERWORKERS

*"Job Engineered" to do a hundred and one jobs*

**POUND FOR POUND**, dollar for dollar, you can't beat the value in CLARK'S POWERWORKER Line. You get big-truck benefits at rock-bottom, small-truck cost. Take the POWERWORKER stacker, for example: a rugged, modern fork truck, but cut to fit the tighter handling pattern of narrow aisles, low-load floors, limited budgets. Short turning radius, easy finger-tip control and ample power-plant assure fast, safe handling and stacking. Truly big-truck performance in an economical package.

Ask your CLARK dealer about the POWERWORKER models: stacker, pallet truck, platform truck and tug tractor—"walk 'em or ride 'em." These power-packed time-savers are job-engineered to cut your handling costs in a hundred and one ways. They're built right and priced right to give you top-dollar value.



THE SIGN OF THE BEST BUY LINE



**CLARK** ELECTRIC AND GAS POWERED  
AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BUKHARAN 5, MICHIGAN

Please send: ☐ Powerworker literature ☐ Material Handling News ☐ Have Representative Call.

Name \_\_\_\_\_  
Firm Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS



When inquiring check CP 7780 on handy form, pgs. 2-3

### MATERIAL HANDLING

**Industrial wheels built for 230-1140 lb capacities**

Manufacturer of industrial wheels has extended line to include semi-steel wheels in capacities from 230 to 1140 lb.

Wheels are equipped with cylindrical roller bearings, have high-tensile, solid rubber tires. Tires are puncture proof, tear resistant, and molded permanently to wheels. Hubs are drilled for 5/16" drive type grease fitting. Wheels can be used as replacement parts or as new equipment for hand trucks and industrial trailers.

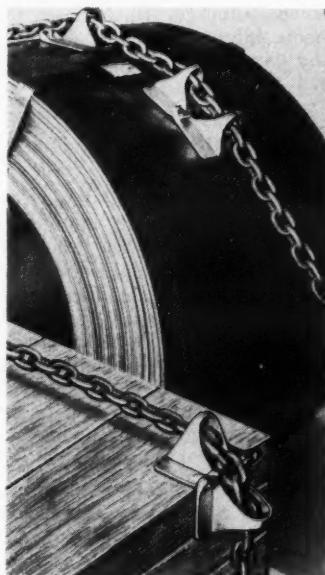
(Development of Phillips Mine & Mill Supply Company, Department CP, 2339 Jane Street, Pittsburgh 3, Pennsylvania . . . or for more information about this product check CP 7781 on handy Reader Service slip between pages 2 and 3.)

**Protects loads against damage during transit . . .**

prevents chain or cable contact during tightening

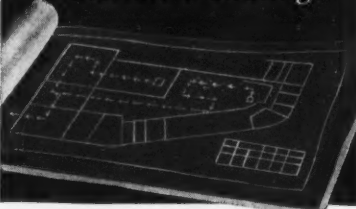
**Uses:** For preventing damage to any type of load (steel coils, sheets, pipe, tubing, clay products, crating, machinery) and as an aid in various protective unloading tasks.

**Features:** Chain or cable con-



Loads won't shift or mar

Take an **EXTRA** Profit  
with **Weld-Bilt**  
Experience in  
Materials Handling!



One Midwest manufacturer saved \$90,000 on equipment cost alone because he called in a Weld-Bilt engineer FIRST, before deciding on expensive special-design units recommended to solve a difficult handling problem. Our engineer, experienced in cost-saving shortcuts, showed how simple adaptation of more standard equipment could do the job even better.

This is the kind of service you can expect from WELD-BILT . . . a thorough analysis of your problems based on years of varied experience and wide knowledge, of handling problems . . . then a recommended solution that will do YOU the most good—in time and labor savings, in product protection, production speed-up—at the lowest cost. It may involve adapting standard equipment, custom-engineering new equipment—or merely realigning your present operations.

Call in the WELD-BILT Materials Handling Engineer for an economical solution to your problem today. You'll probably save money.

**WEST BEND EQUIPMENT CORP.**

322 Water St., West Bend, Wis.

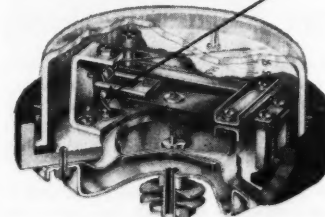
**MATERIALS  
HANDLING  
ENGINEERS**

Portable Elevators • Pallet Trucks • Single Stroke Lift Trucks • Two-Wheel Trucks • Platform Trucks • Skid Platforms

When inquiring check CP 7782 on handy form, pgs. 2-3

*Only*  
**Dwyer**  
**MAGNEHELIC GAGE**  
has the  
ultra-sensitive  
"MAGNETIC LINK"

Not subject to surge or vibration damage



**EXCEPTIONALLY VALUABLE FOR MEASURING**

- Filter Resistance
- Air Velocity
- Furnace Drafts
- Static Pressures
- Gas Pressures
- Checking —

Flow meters, control equipment, automatic valves, gas-air ratio controls, etc.

The exclusive "Magnetic Link" is a Dwyer Development offering extreme sensitivity, low cost and a ruggedness that makes the Magnehelic Gage ideal for portable, as well as stationary, use. Long Life and trouble-free operation is assured. Ranges from 0-1" of water to 0-2 psi.

Request  
Bulletin  
No. 250

**F. W. Dwyer Mfg. Co.**

335 SOUTH WESTERN AVENUE • CHICAGO 12, ILLINOIS

When inquiring check CP 7783 on handy form, pgs. 2-3

CHEMICAL PROCESSING

# COLTON FINEST QUALITY STAINLESS STEEL TANKS

ALL TYPES—STORAGE—PROCESS

## AGITATORS

ALL TYPES—PORTABLE—BUILT-IN

*Write for Literature*

ARTHUR  
**COLTON**  
COMPANY

Established 1887

Div. Snyder Tool & Engineering Company

3400 E. LAFAYETTE • DETROIT 7, MICHIGAN

When inquiring check CP 7784 on handy form, pgs. 2-3

Save time! Prevent accidents!

**LIFT AND DUMP**  
MECHANICALLY

**BAGS  
BARRELS  
DRUMS  
BOXES**

**REDUCE HANDLING COSTS** with a Cesco Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

**ESSEX CONVEYOR, INC.**

101 Colden Street • Newark, New Jersey

**COLSON EQUIPMENT & SUPPLY CO.**

1317 Willow Street • Los Angeles 13, California



When inquiring check CP 7785 on handy form, pgs. 2-3

FEBRUARY, 1953

## MATERIAL HANDLING

tact with the load is prevented. Increased chain tension is possible, making loads more compact and less likely to shift.

**Description:** Two pieces hinge-lock together to make the 3-lb unit that angles from 90 to 180°. Pieces can be used singly by simply lifting them apart. Hinge-Guards accommodate chain or cable up to and including 1/2", and if grab hook is already secured to chain, it will thread through the unit.

(Development of Canton Manufacturing Co., Dept. CP, 2408 13th Street N.E., Canton, Ohio . . . or for more information check CP 7786 on handy form, pages 2 and 3.)

### Flow-resistant materials can be fed continuously

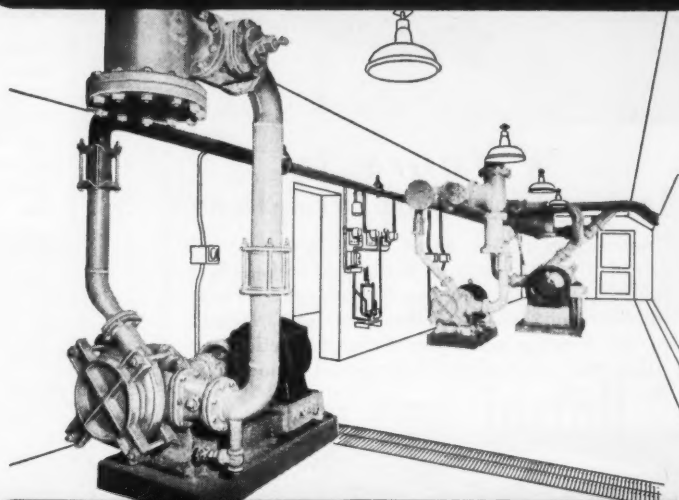
Employing a stripping action principle, feeder unit is designed to make feeding of damp, oily, difficult-to-feed materials a continuous operation. Unit is available in wide range of sizes — from smaller units with discharge rates of grams per minute to larger units capable of discharging the material at rates of 100 tons or more per hour.

Unit will handle the following materials which are representative of the type of substances for which unit was designed: filter cake, asbestos fiber, centrifuge cake, damp ores, diatomaceous earth, pastes (non-flowing), waxes, sludges, putty, starch (dry), starch (to 48% water), wood flour, stearates, detergents, damp chemical salts, heavy inks, spent grain, pigments, oxides, and food fats.

Specifications, principle of operation, and performance are described in illustrated 4-page bulletin. "Com-Bin Feeder" is issued by Pulva Corp., Dept. CP, 567 High St., Perth Amboy, N. J. When inquiring specify CP 7787 on form, pages 2 and 3.

Compilation of Formulas for  
Centrifugal Blowers  
in the Processing & Engineering  
Data section  
on page 190

## Handles extremely thick slurries with high specific gravities



## MORRIS Type R SLURRY PUMP

Heavy viscous slurries with solids ratios as high as 70% by weight are not unusual loads for a Morris Type R Slurry Pump.

A case in point is this Morris installation at the Missouri Portland Cement Co., St. Louis, Mo. The two Morris 3R Pumps in the foreground each handle 200 GPM of a cement slurry at 64% solids with 1.66 specific gravity. Speed is 1180 RPM. The 6R Pump in the background handles 600 GPM of the same slurry at 880 RPM.

### Long operating life... little or no maintenance

Massive running parts of the Type R compensate for the increased load imposed by high specific gravities. Hydraulic passages are deliberately designed for high concentrations of solids—the result of careful study of wear patterns shown by pumps in the field handling all kinds of abrasive materials. Elimination of areas of throttling and turbulence assures uniform wear of all parts.

There are no internal studs or bolts—no troublesome internal joints and fits. The suction disc liner is merely clamped into position between disc and shell. The absence of high stress on the shell permits wide variations in its composition—including materials of high abrasive resistance—to resist wear and extend the operating life of the pump.

Let our engineers consult with you on your slurry pump problems. They'll give you the benefit of 88 years of pump-building experience. Or, write for Bulletin 181.

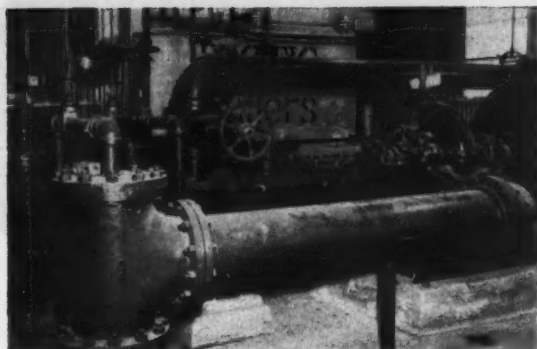
**MORRIS MACHINE WORKS**

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**MORRIS** Centrifugal Pumps

When inquiring check CP 7788 on handy form, pgs. 2-3





## "K" Fittings in largest helicopter plant

Conspicuous in the above photo are some of our big flanged tees and elbows. You will also see several of our companion flanges and screwed elbows. This is one of the numerous installations of "K" Fittings in the world's largest helicopter plant, that of Piasecki Helicopter Corporation, Morton, Pa.



Plant of Piasecki Helicopter Corporation



Piasecki H-21 Work Horse currently on the production line.

Good workmanship sells "K" Fittings

**K PIPE FITTINGS**  
CAST IRON AND MALLEABLE  
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**THE KUHNS BROTHERS COMPANY**

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Combined marketing facilities with  
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## Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications,  
... as selected by Technical Editor, Harry McCormack

### Pitting corrosion of 2S aluminum alloy

Authors made a metallographic study of corrosion induced in this alloy, in both the fully work-hardened and annealed state. Corrosion induced by 15 min, 24 hr and 10 weeks immersion in tap water (components in water stated). Panels degreased and dried prior to exposure then examined under conventional light microscope and the electron microscope. Typical photomicrographs are presented. Electron stereomicrographs of the 15 min and 10 weeks pitting reveal new and interesting characteristics of the pit structure. 6 pages, 34 photomicrographs. ("Canadian Journal of Technology," October-November, 1952, page 311)

### Fusion welded pressure vessels

Paper presents the discussion on the Provisional British Standard Code for such vessels when used in the chemical and allied industries. 11 pages, 9 figures. ("Transactions of the Institution of Chemical Engineers, London, Vol 28," page 118)

### Corrosion of galvanized steel in soils

Report contains results of measurements on the corrosion of specimens of galvanized steel, bare steel and zinc exposed to different soil conditions for periods up to 13 years. Properties of the soils at the test sites included in tabulated data. 16 pages, 3 tables, 6 figures. ("Journal of Research NBS," November 1952, page 299)

### Corrosion of low-alloy irons and steels in soils

Report similar to above, using samples of other ferrous products. 10 pages, 5 figures, 5 tables. ("Journal of Research NBS," November 1952, page 315)

### Construction and operation of automatic ozone analyzer

Authors describe construction and operation of equipment which has been in operation for about two years. Limitations as to working concentrations and as to interfering elements are stated. 3 pages, 5 figures, 2 tables. ("Analytical Chemistry," November 1952, page 1796)

### Experimental research on corrosion

Author presents results of himself and collaborators. Comments on usefulness of the electrochemical concept of corrosion in facilitating their study of corrosion on the one hand and passivation on the other. Presents some explanations as to the action of inhibitors. 11 pages, 7 figures, extended bibliography. ("Chemie Et Industrie," October 1952, page 511)

### Sizing control valves

Author proposes that, "Determination of a control valve's size for a given application is not an exact science." He then discusses factors which will assist in "guessing" the appropriate size. 2 pages, 1 photo. ("Heating, Piping, and Air Conditioning," November 1952, page 98)

### Organization/administration of chemical market research

"Paper is concerned primarily with chemical market research as a function of the business itself." Recommends that outside consultants be used if necessity for research occurs infrequently. Presents answers to the questions: What volume of market research is required. What are the objectives in employing chemical market research. Lists 9 items which may comprise the research program. 4 pages. ("Chemical Engineering Progress," November 1952, page 575)

### Storage and material handling

Article describes such a system, recently installed by a large petroleum processor where wide variety of materials are handled. These include both supplies for plant operation and products for customers. Illustrations include: general floor plan, activities in handling and storage section, types of storage employed (4), yard storage plan, materials handling in the yard, and schematic drawing of communications system. 6 pages, 3 drawings, 10 photos. ("Flow," November 1952, page 57)

### Analytical methods for industrial wastes

A group of papers on this general topic:  
(1) "Systematic Analysis of Organic Industrial Wastes". Methods based on the separation of

classes or organic compounds by virtue of differences in solubility. Has been applied to five diverse industrial wastes.

(2) "Determination of Pyridine and Pyridine Base Compounds".

(3) "Chromium Toxicity by Several Oxygen Demand Tests". (Evaluated particularly with respect to effects on customary sewage treatment methods.)

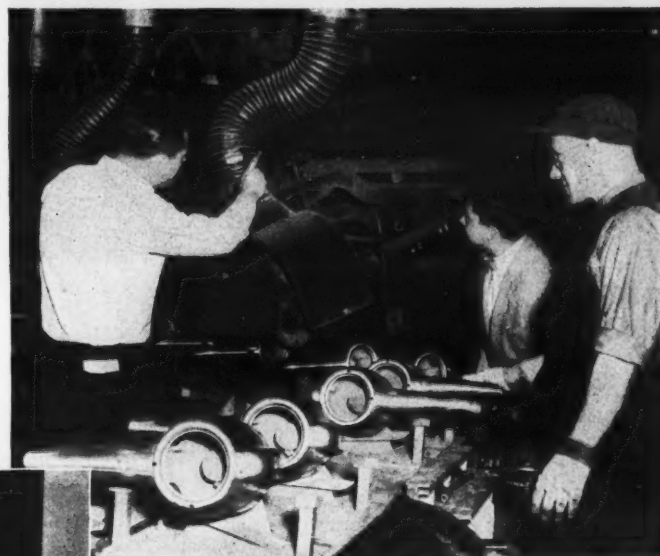
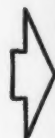
(4) "Residual Chlorine in Metal Finishing Wastes".

(5) "Polarographic Determinations of B. O. D. in Sewage and Industrial Wastes".

(6) "Microquantities of Iodine by Amperometric Titrations".

21 pages, many figures, tables, etc. ("Analytical Chemistry," December 1952, page 1872)

## Whether DUST REMOVAL OR MATERIALS HANDLING



# You can install SPIRATUBE® yourself

Whether your application requires dust removal . . . or materials handling . . . you can set up your lines of SPIRATUBE to meet your requirements. AND . . . what's more important — you can do it yourself. That cuts downtime to a minimum, and enables you to keep your ducting system in operation to meet your production needs.

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CORPORATION

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State \_\_\_\_\_

### Turbogrid distillation trays

Story presents the stages in the development of a new vapor-liquid contact zone in a distillation or absorption column. Trays have been in commercial use for some time in a number of installations. Comparisons are made between customary equipment and the new type as to pressure drop, hold up, efficiency, ease of cleaning, cost, and maintenance. 4 pages, 2 tables, 9 figures. ("Petroleum Refiner," November 1952, page 105)

### High-vacuum vapor pumps

Paper deals with methods of measuring and describes most useful performance characteristics of high-vacuum vapor pumps. Most of these are inter-related and are difficult to express as entities. Author presents a graphical method which has been tested and found highly useful in evaluating pump performance. 5 pages, 7 figures. ("Chemical Engineering Progress," November 1952, page 537)

### Spectrophotometric and chemical methods for fatty acids

Forty-eight cottonseed oils, with a varied history and iodine values from 89.8 to 117.0 were used in the investigation. It was found possible to consider simply the customary calculation for linoleic acid content and secure satisfactory values. Chemical and spectrophotometric analyses had an average deviation of 2.4% in values. 5 pages, 3 tables. ("Journal of American Oil Chemists' Society," November 1952, page 461)

### Nylon-phenolic terminal board material

A new laminate material is described which maintains its properties under higher operating temperatures, higher humidities and the presence of fungus than do previous materials. Tests on this material and a number of others are given. Producers are named. 3 pages, 4 figures. ("Modern Plastics," November 1952, page 137)

When inquiring check CP 7790 on handy form, pgs. 2-3



Save Time... Reduce Labor  
ON THESE 6 JOBS!



- 1 **TO FILTER**  
a solid from a suspension.
- 2 **TO DRAIN**  
a solid by removal of surface moisture.
- 3 **TO DEHYDRATE**  
a solid by displacement of water or other liquid by miscible solvent.
- 4 **TO CLARIFY**  
a liquid by sedimentation.
- 5 **TO THICKEN**  
a suspension by a partial removal of a liquid.
- 6 **TO SEPARATE**  
a mixture of two or more miscible liquids, or an unfilterable gelatinous material from a liquid.

TOLHURST "Center-Slung" Centrifugals do your processing jobs faster... more economically. New, improved design permits handling of 3 to 4 times greater out-of-balance loads. Less care is required for loading the basket. "Center-Slung" Centrifugals are available with split or full cover and can be constructed of any practicable material, as specified. Single speed or two speed motor drive, or infinitely variable speed hydraulic drive available. Basket sizes, 12" through 108" in diameter.

Many applications involve engineering problems which must be solved individually. Tolhurst maintains a complete laboratory for centrifugal research, completely equipped and staffed by experts to conduct trial runs on materials and equipment. Tolhurst also maintains competent field engineers who are available for consultation.

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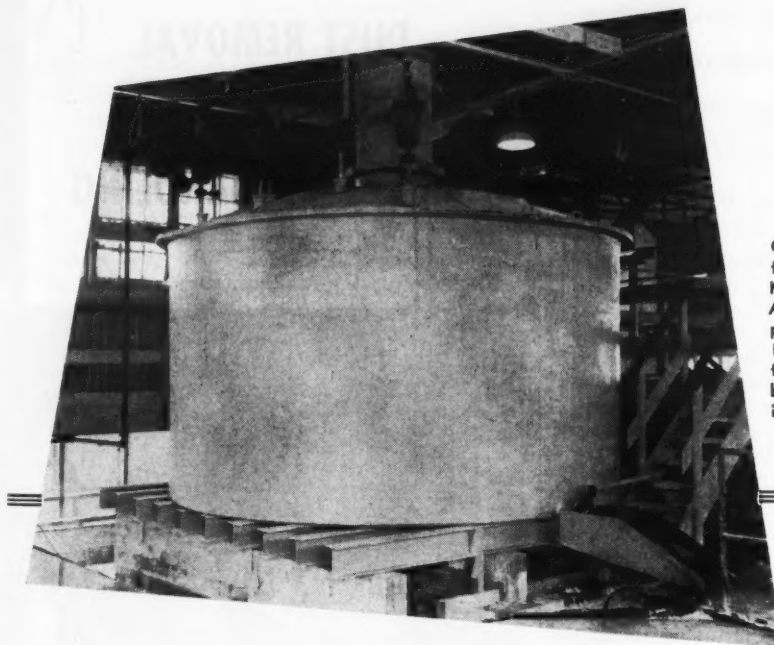
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**CENTRIFUGALS  
DIVISION**

AMERICAN MACHINE AND METALS, INC.  
EAST MOLINE, ILLINOIS

When inquiring check CP 7791 on handy form, pgs. 2-3

processing  
equipment



One-piece reinforced plastic evaporator tank at Mobile, Ala., plant of American Cyanamid Company. Inside diameter is 14.5', sidewalls are  $\frac{3}{8}$ " thick and 8' high, and bottom is  $\frac{1}{2}$ " thick, weight is 2200 pounds

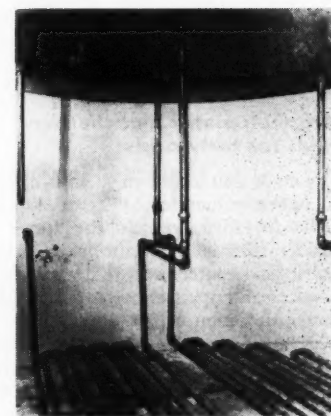
## One-piece Plastic Evaporator Tanks End Product Contamination —

In highly corrosive evaporation step for alum production; 1/6th weight of tanks they replace, 1/2 their cost

**PROBLEM:** A pair of large steel evaporator tanks were used at the Mobile, Alabama, plant of the American Cyanamid Company for production of alum (a grade used principally for paper sizing and sewage treatment). The tanks evaporated water from aluminum sulfate liquors having a pH of about 3.0.

Although the tanks were lined with lead and acid-proof brick for corrosion resistance, there was always the danger of product contamination from brick spalling, brick chips, and rust and corrosion of the steel. In addition, maintenance costs on the steel tanks were very high in order to keep them in operation.

Interior view of one-piece reinforced plastic evaporator tank, showing stainless steel steam coils that bring aluminum sulfate liquors to 242°F



**Solution:** A 5-month experiment was conducted with a small scale evaporator tank molded from glass-reinforced Laminac 4119 Resin (a thermosetting polyester noted for its good corrosion resistance). This proved completely successful under simulated operating conditions.

As a result of the successful operation of the small scale unit, a production-size evaporator tank, molded in one piece, was fabricated\*. This was

used to replace one of the two steel tanks in August 1952 and is believed to be the largest of its kind in the country — measuring 14.5' inside diameter with 8' sidewalls. High strength-weight ratio of Laminac made it possible to design the tank with a side-wall thickness of merely  $\frac{3}{8}$ ", and a bottom thickness of  $\frac{1}{2}$ ".

Illustrations give a better idea of the one-piece construction. The  $\frac{1}{4}$ " thick Laminac cover is also one-piece construction and is flanged to the sidewalls. A 22' high, 30" diameter Laminac stack flanged to the cover acts as an escape for steam. The stack is seamless but is molded in three sections of length.

The second steel tank in the operation was replaced with a similar evaporator tank molded in sections\*\*.

Stainless steel steam coils provide operating temperatures ranging from 160 to 242°F in both tanks. The evaporation process takes about 4 hours, and the liquor charge for each cycle is 4000 gallons and weighs 20 tons.

**Results:** Greatest advantage gained from the use of these Laminac tanks has been complete freedom from product contamination. Laminac does not chip, corrode, or rust, and does not affect aluminum sulfate. Maintenance costs are reported to be completely eliminated.

The one-piece molded tank cost \$6500 to construct, as against \$14,000 for the steel tank which it replaced. It weighs 2200 pounds as against 13,200 pounds for the steel tank.

(Laminac Resin is a product of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, New York . . . or for more information check CP 7792 on handy form, pages 2 and 3.)

\*Carl N. Beetle Plastics Corporation  
145 Globe St.  
Fall River, Mass.

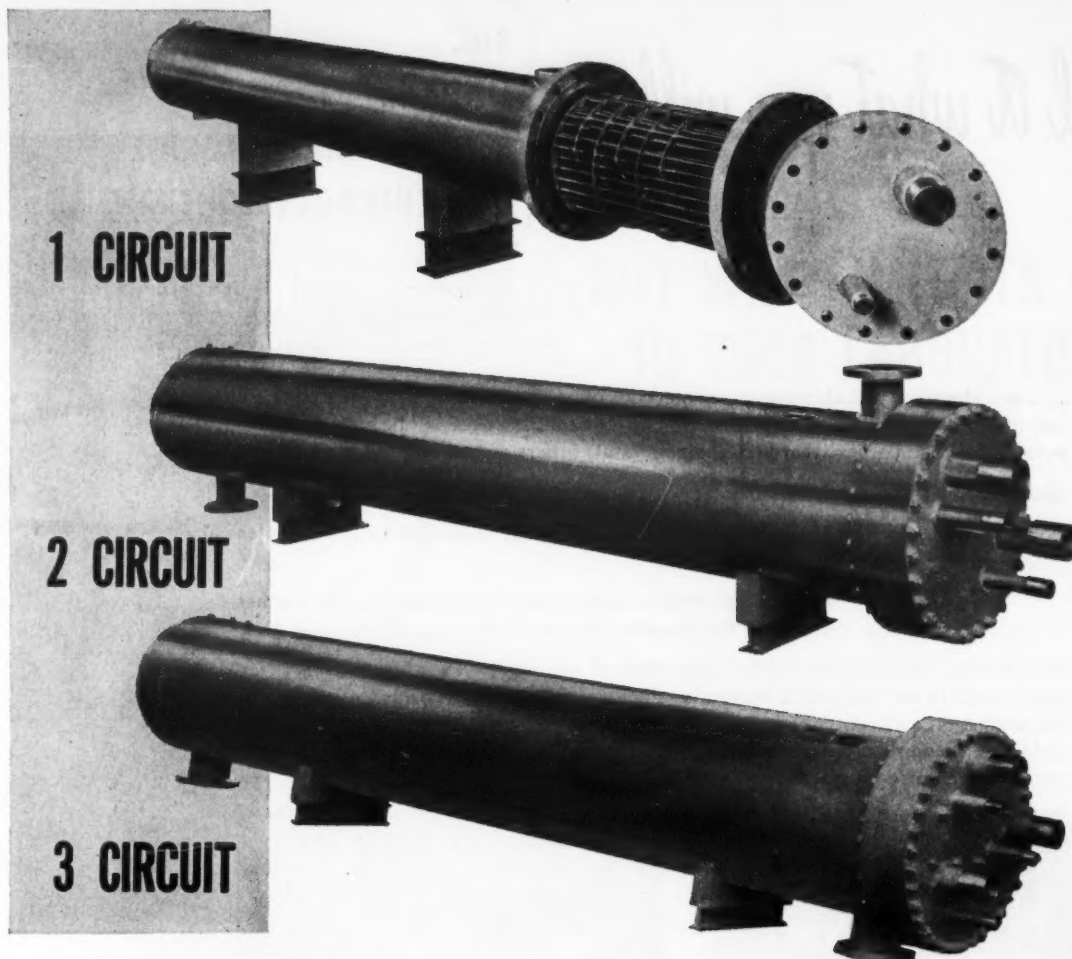
\*\*Murdock Tank and Manufacturing Company  
3418 South Santa Fe Street  
Tulsa, Okla.

#### Carbo-nitriding furnaces perform many hardening operations

Gas-fired, vertical radiant tube carbo-nitriding furnace, which is an easily maintained, self-contained unit, is described in four-page bulletin. In addition to carbo-nitriding operations units may be used in carburizing, annealing, carbon restoration, and other hardening applications.

Furnaces are available in three types — manual loading with automatic cycle and quench, manual operation with power push, and complete manual operation. Instead of conventional, heavy and hard-to-handle horizontal radiant tubes, unit utilizes eight lightweight thin-wall vertical tubes. In addition tube replacement is a simple operation as a result of furnace's slip-out type installation assembly.

Bul 241, which describes and pictures features and uses of units, is issued by Lindberg Engineering Co., Dept. CP, 2450 W. Hubbard St., Chicago 12, Ill. When inquiring specify CP 7793 on handy form, pages 2 and 3.



## p-k FREON COOLERS

### even out fluctuating loads



Here is the sure answer to the problem of fluctuating cooling loads—supplied by p-k. One, two or three circuit p-k Freon Coolers are specifically recommended to match your load. They are the practical, logical, economical answer to uniform cooling needs. Each type is designed to insure maximum heat transfer efficiency under the particular load conditions specified for the job. Regardless of weather conditions—hot, cold or

moderate—p-k Freon Coolers will constantly maintain optimum temperature differences and high refrigerating efficiency. For the best in value and dependable service—plus dependable operating efficiency—it will pay you to know all about p-k Freon Coolers. Write today for catalog No. 101 covering size ranges, engineering tables and other important data. Send for it now, for immediate use or later reference.

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101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 7794 on handy form, pgs. 2-3



call it what you will...

**BHC  
LINDANE  
BENZENE HEXACHLORIDE  
HEXACHLOROCYCLOHEXANE...**

*... whatever you call it, it's now a tonnage chemical product for farm, home, and industry with a growing, competitive market.*

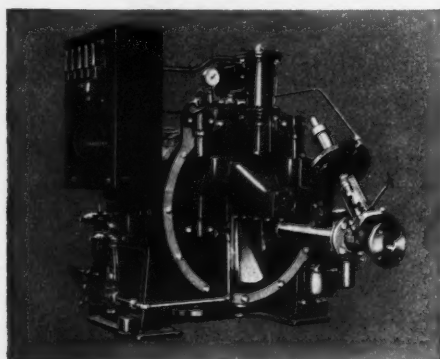
... and there are just about as many methods of producing and purifying it as there are manufacturers. However, there are two basic differences in the various processes: some companies treat BHC as a crystal; others treat it as a sludge.

Sharples has the proved, economical centrifuge for both methods.

**As a crystal, BHC is automatically recovered by the Sharples Super-D-Hydrator.**

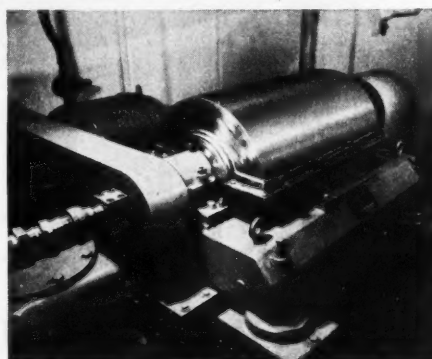
**As a sludge, BHC is continuously separated from the mother liquor by the Sharples Super-D-Canter.**

This is a typical example of the advantage of coming to Sharples when centrifugal force is or may be a factor in efficient processing. Sharples offers seven different types of centrifuges and many variations of each type, upon which an unbiased recommendation and choice can be made... based on our long and varied experience in centrifugal process engineering.



**The Sharples Super-D-Hydrator**

A horizontal, perforate basket, completely automatic centrifuge for the recovery and dehydration of crystals. The functions of loading, rinsing, drying, and unloading are carried out in a series of independently controlled, consecutive cycles.



**The Sharples Super-D-Canter**

A horizontal, solid bowl centrifuge for continuous separation of solids from liquids—especially for slurries and sludges containing relatively large amounts of solids of varying size. Two types are available, for crystalline and amorphous solids.

*It pays to start with Sharples...*

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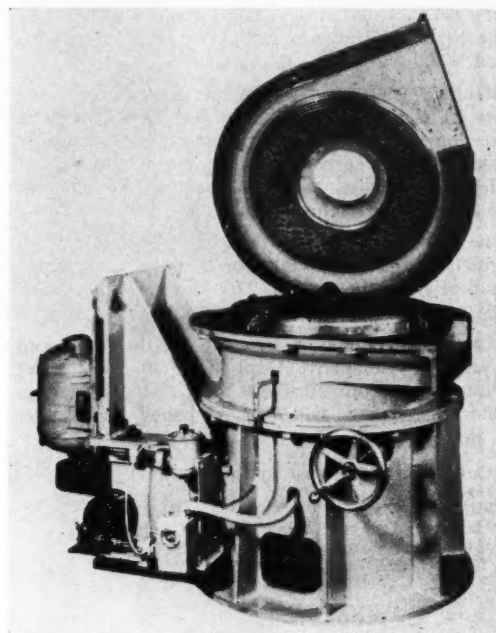
## PROCESSING EQUIPMENT

### **Brighter paper pulp comes from bleach mixer...**

vertical-plate unit handles pulp consistencies from 3% to oven-dry, without plugging

**Uses:** Mixes bleach and paper pulp together continuously. Principal use at present is with peroxide bleach, but it is considered equally suitable for other bleaching agents. Manufacturer developed mixer to handle pulp which had been compressed to high consistency by his Zenith press (approximately thirty-five per cent).

**Features:** Has demonstrated ability to work on pulp at any desired consistency from 3% to oven-dry, without plugging or glazing-over of the plates.



Horizontal-plate mixer employed for bleaching of high-density paper pulp

Action of the mixer assures higher pulp brightness because 1) each fiber gets a uniform thin coat of full-strength bleach solution, and 2) the intense agitation makes the bleach reaction almost independent of the slow diffusion mechanism. For the same reasons, "two-tones" in the bleached stock are minimized.

**Description:** The "015" high density mixer has horizontal discs and a vertical shaft (see photo). The discs are designed to hold interchangeable plates of various designs. For bleaching, the plates have triangular shaped teeth, as shown. The teeth on the upper plate mesh with those on the lower, so that teeth on both are kept clean. Plates remain exactly parallel despite the high speed of rotation (normally 1750 rpm).

Pulp is introduced at a uniform rate at the top, and hits a "flinger" which throws it outward, between the plates. As the pulp moves out toward the peripheral discharge, it is combed between the opposing



teeth until it has been reduced to a fluffy mass of individual fibers. Plate separation is usually set between  $\frac{1}{8}$  and  $\frac{3}{8}$ ".

Bleach solution is added through three nozzles at  $120^\circ$  to each other, and each about  $\frac{2}{3}$  the distance from center of the mixer to its periphery. Velocity is sufficiently high at this point to atomize the solution to particles approaching molecular size.

Handwheel on side of machine may be used to adjust the mesh of the plates, even while the mixer is under full load. Mixer is lubricated by force feed. Main motor shuts down in case of lube system failure.

A unit has been tested for close to two years under actual mill conditions. Plates originally furnished are still in service.

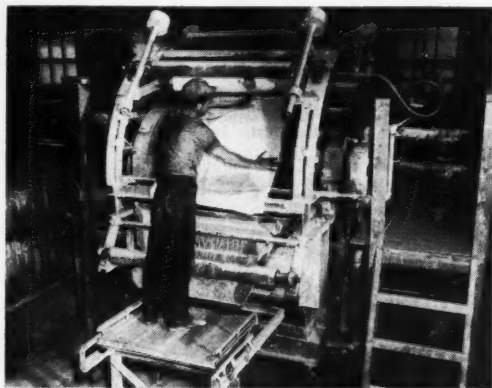
(Mixer is a product of Jackson & Church Company, Dept. CP, Saginaw, Mich. . . or for more information check CP 7796 on handy Reader Service slip, pages 2 and 3.)

#### Less costly filter shutdowns when cloths are Dynel . . .

long life, plug resistance and easy separation from cake reported in caustic filtration

Dynel filter cloth's resistance to strong caustics is saving money for Foote Mineral Company, Philadelphia, where it has substantially reduced shutdowns of rotary vacuum filters on which it is used. The cloth has completely resisted plugging, and it readily separates from the filter cake.

In recent tests, Dynel was subjected to 50% concentrations of sodium hydroxide and 28% concen-



Photograph shows workman installing Dynel filter cloth on rotary vacuum filter

trations of ammonium hydroxide. The only loss of strength was 6% noted in the filling of the Dynel immersed in the sodium hydroxide. No physical changes occurred, and no shrinkage was observed.

(Dynel is made by Textile Fibers Department, Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, Department CP, 30 E. 42nd Street, New York 17, New York.)

The Mortar and Pestle  
has been the world's  
"NUMBER ONE" MIXER



## ...BUT WHY LIMIT ITS USE TO YOUR LABORATORY?

SINCE the days of the ancient Greeks, the *mortar and pestle* has been one of the primary means of preparing materials where intimate blending is vital. The rubbing, smearing action accomplished in a mortar and pestle is the basis for present-day mixing practice . . . although *all* mixing equipment does not produce these desired results. In processing work, true *intensive* mixing is called MULLING, because it can be accomplished only in a muller-type mixer. Here, the components are not merely placed next to each other—but are thoroughly blended together to form a completely uniform, inseparable mass.

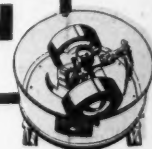
Utilizing a special pair of revolving mullers and plows, the SIMPSON MIX-MULLER is designed to duplicate the controlled uniformity which you may now be producing by the mortar and pestle method in your laboratory. Thus, with SIMPSON MIX-MULLERS, you can be sure that your production mixing can be just as carefully and accurately controlled as laboratory or pilot plant mixing. Manufactured in 12 basic models, in batch capacities from 1/10 to 60 cu. ft., SIMPSON MIX-MULLERS may be equipped to meet your processing needs . . . as a reaction vessel . . . for heating or cooling while mixing . . . in stainless or other special metals. Backed by 40 years of specialization in mixing equipment and problems, our engineers will welcome the opportunity of helping you to bring "laboratory control" to your production floor.

Write for literature.



### SIMPSON MIX-MULLER® DIVISION

NATIONAL ENGINEERING CO., 624 Machinery Hall Bldg., Chicago 6, Ill.  
(Not Inc.)



When inquiring specify CP 7797 on handy form, pgs. 2-3

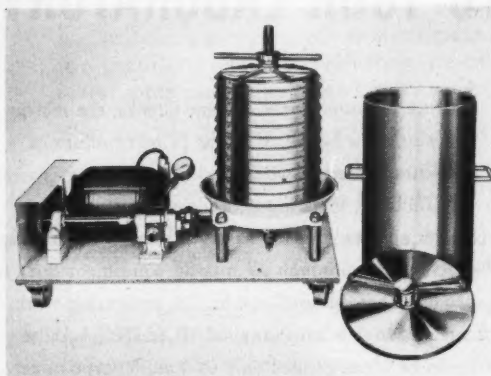


**Down-flow principle of filter provides means for building uniform, stable cake . . .**

center feed pipe keeps amount of unfiltered material to a minimum

**Uses:** For filtration of volatile solutions, chemicals, drugs, and other materials.

**Features:** Means for building a uniform, stable cake which will not part from screens, as in case of reverse-flow units, is provided by down-flow principle of filter. Amount of unfiltered material

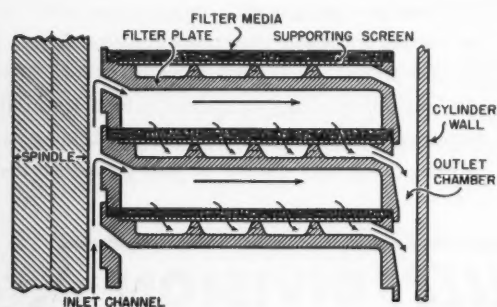


Down-flow filter is shown connected to pump, with outer cylinder and top at right

is minimized, being only that in center feed pipe rather than within entire cylinder. This is particularly important where expensive materials are being filtered.

**Description:** Model ECF Filter is arranged so that filtering elements are tightened independently from outer cylinder, as shown in Fig 1. This furnishes positive seal and allows use of various types of filter media. It also prevents danger of by-passing unfiltered liquids. Materials are not lost due to leakage or evaporation.

In typical filtration cycle liquid enters unit through inlet pipe in center of plates, as shown in half-section



Center-feed operation of filter is illustrated in half-vertical-section view

view in Fig 2. From inlet channel in center of unit, liquid is forced over to filtering area and through filter media. Filtered liquid passes into chamber

# You can put full confidence in them!

THESE *McQuay* REPRESENTATIVES



No. 1 in a series of 3 advertisements

# McQuay INC.



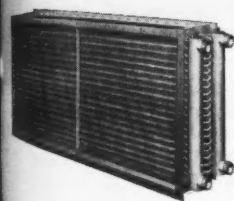
HEATING  
REFRIGERATION  
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1615 Broadway St. N. E., Minneapolis 13, Minnesota

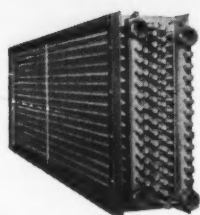
THIS COMPLETE LINE OF FAMOUS

*McQuay*

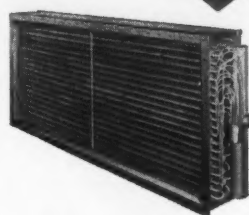
PRODUCTS



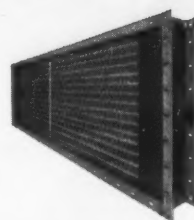
WATER COIL



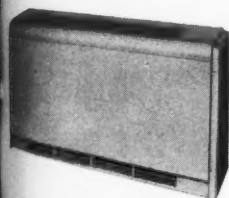
CLEANABLE TUBE WATER COIL



DIRECT EXPANSION COIL



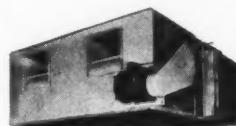
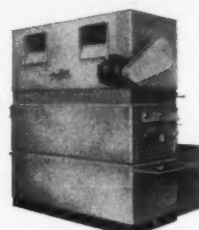
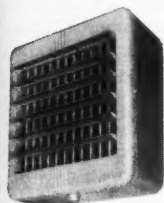
'BLAST' HEATING STEAM COIL



SEASONMAKER (FLOOR)



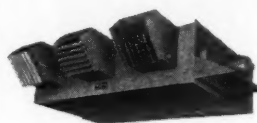
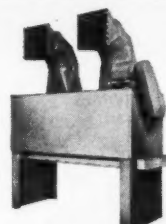
'RH' AIR CONDITIONER

AIR CONDITIONER  
(Suspended Model)AIR CONDITIONER  
(Floor Model)

HORIZONTAL UNIT HEATER

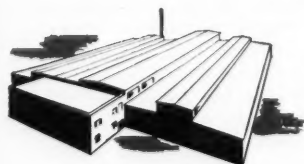


DOWN FLOW UNIT HEATER

BLOWER TYPE UNIT HEATER  
(Suspended Model)BLOWER TYPE UNIT HEATER  
(Floor Model)

McQuay representatives, in all principal cities throughout the United States, are qualified by long experience and training to help you satisfy all of your air conditioning and heating requirements. For cooperation in making the sale, technical advice, or getting the job done on time, consult the McQuay

representative in your territory. Available to you through him is the complete line of McQuay products, featuring famous Ripple-Fin construction—a McQuay exclusive, assuring maximum heat transfer efficiency and dependable performance.

PLANT 1—1600 Broadway N. E.  
MINNEAPOLIS 13, MINN.PLANT 2—1729 Broadway N. E.  
MINNEAPOLIS 13, MINN.PLANT 3—4th and Park Ave.  
FARIBAULT, MINN.

When inquiring check CP 7798 on handy form, pgs. 2-3

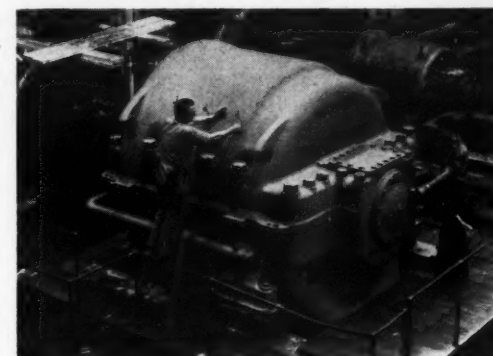
between filtering portion of unit and outer chamber. Filtrate leaves through outlet pipe located on side of filter base.

Filter can be quickly and easily cleaned. Capacity is two to twenty filter sheets. For installations where unit is to be used for filtering various types of solutions, plate capacity can be varied by use of spacer collars. Pump or motor, which is optional, depends on requirements. Unit is normally made in stainless steel but can be obtained with nickel plated bronze circulatory system.

(Product of Ertel Engineering Corp., Dept. CP, Clinton Ave., Kingston, N. Y. . . . or for more information check CP 7799 on handy form, pages 2 and 3.)

### Will blow 100,000 cfm of air into new cat crackers

In foreground of accompanying photograph is one of several multi-stage centrifugal compressors to be used as main air compressors on four of the country's new huge catalytic crackers. Built for discharge pressures of 100 psi, the units are rated



at capacities to 100,000 cfm and will be driven by steam turbines of about 8000 bhp. Overall weight of each compressor is 70 tons. The 4½' diameter rotors will run at 3600 rpm.

Compressor shown is on a test stand. Man at left is installing test thermocouples to check interstage temperatures.

(Photo taken in shop of Clark Bros. Co., Dept. CP, Olean, N. Y.)

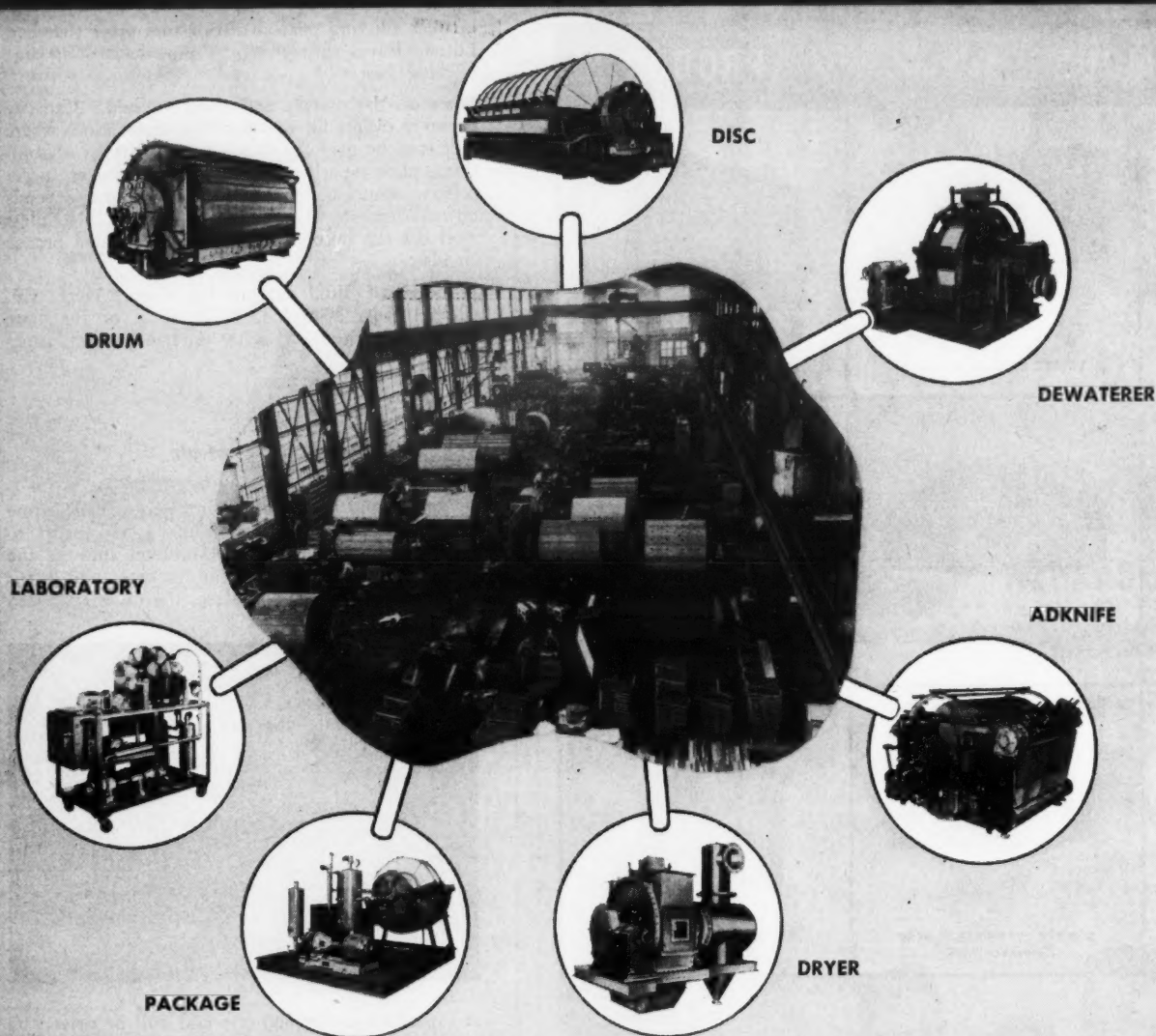
### Illustrates six types of industrial mixers

Six-page bulletin describes and pictures various models of industrial mixers, multi-duty mixers, side entry agitators, adjustable height mixers, type D mixers, and batch type mixers.

Bul 521 is issued by Conn and Company, Dept. CP, 11 S. Marion St., Warren, Pa. When inquiring specify CP 7800 on handy form, pages 2 and 3.



# EIMCO VACUUM FILTERS



## FOR THE PROCESS INDUSTRIES

Production of all types of continuous vacuum and pressure filters from our new filter plant has reached an all time high. In addition to production these facilities have given us an opportunity to try out new techniques, work out better ways of producing the special equipment your plant will require. We can now recommend new materials we've been experimenting with in our laboratories.

Write for information on the type of filtration equipment you'll be needing — your problem will be kept in strictest confidence. Eimco makes

all types of vacuum filters and we'll tell you about the one we think will do the job best. It'll be the best filter you can buy at any price.

### EIMCO

THE EIMCO CORPORATION

The World's Leading Manufacturer of Vacuum Filtration Equipment  
EXCLUSIVE OFFICES AND FACTORIES: SALT LAKE CITY 10, UTAH, U. S. A.

#### BRANCH SALES AND SERVICE OFFICES:

NEW YORK, 51-52 SOUTH STREET • CHICAGO, 3319 SOUTH WALLACE STREET  
BIRMINGHAM, ALA. 3140 FAYETTE AVE. • DULUTH, MINN. 216 E. SUPERIOR ST.  
EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIF. 637 CEDAR STREET  
KELLOGG, ILLINOIS, 107 DIVISION ST. • LONDON W. 1, ENGLAND, 190 PICCADILLY

IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE

IN ENGLAND: EIMCO, GREAT BRITAIN, LTD. LEEDS 12, ENGLAND

IN ITALY: EIMCO ITALIA, S.P.A., MILAN, ITALY

## PROCESSING

### Laboratory tests prove that mixer performs thorough job . . .

arms and blades supply constant sweeping action

**Uses:** For mixing of soaps, chemicals, minerals, and other similar materials.

**Features:** Continuous scooping and mixing action of unit's arms and blades has been proven by laboratory tests to mix batch after batch and always come out with the same analysis. This is shown by chemical plants who make an analysis of each batch of material after it is mixed.

**Description:** Marion Mixer consists of shaft mounted arms and blades rotating in a cylindrical shaped chamber with round bottom, and straight sides. Mixer arms are semi-steel and are reinforced at points of greatest strain. They are mounted on 2 7/8" high tensile strength shafting. Mixer blades are constructed of high carbon plow steel.

Close tolerance between blades and walls avoids unmixed pockets and assures thorough blending. Unit is constructed so that it practically cleans itself each time the mixer is emptied.

Mixer is heavily constructed, with ball bearings throughout, and is built to provide long service without breakdowns.

Unit is easily installed. It is mounted on heavy angle iron legs, convenient for sacking out. Mixer comes equipped with 36" diameter flat faced drive pulley, upon which V-belts are run. Higher production can be obtained by using receiving hopper above mixer, allowing continuous operation. Some plants discharge mixer into large bin, from which the final sacking operation is done.

Unit is available in standard and heavy duty models. Sizes range from 500 lb to 2 ton capacity.

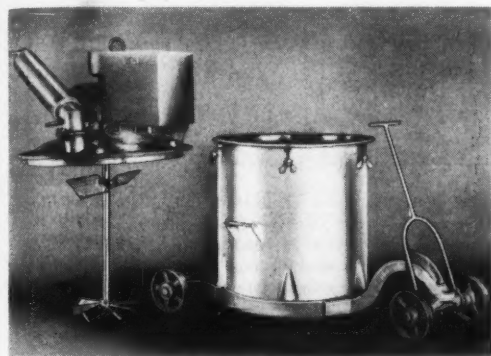
(Marion Mixer is manufactured by Rapids Machinery Company, Department CP, Marion, Iowa, . . . or for more information check CP 7801 on convenient Reader Service slip, pages two and three.)

For more information on product at left specify CP 7802 . . . see information request blank between pages 2-3

**Compactness and completeness combined in resin kettle**

Synthetic resin kettle combines compactness and versatility with completeness of operating features. The 250 gal stainless steel unit is designed to provide on-the-spot synthetic resin production. It is said to furnish economical and fast handling of manufacturers' and processors' problems.

Kettle's turbine-type agitator is driven by explosion-proof motor. Vertical output shaft of motor utilizes



Top of portable kettle is at left

a chain drive. Special oil seals, plus bearing construction, prevent grease and oil from entering the kettle. Valve permits injection of inert gas through shaft to blanket top of batch. Adjustable foam breaker, thermometer holder, reflux condenser, and charger hole are provided. Other portable resin kettles up to 750 gal capacity can be obtained from manufacturer.

(Brighton "Low Boy" Synthetic Resin Kettle is manufactured by Brighton Copper Works, Inc., Dept. CP, 820 State Ave., Cincinnati 4, Ohio . . . or for more information check CP 7803 on handy form, pages 2 and 3.)

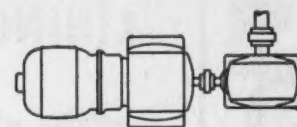
**Precision vibration analyzer offers rugged construction**

A vibration analyzer which can be used for detecting and analyzing vibration as well as balancing practically any rotating part without removing part from its installation is described in four-page bulletin. Unit has range from 500 to 40,000 rpm and is useful in analysis evaluation, and correction of vibration. Slightly larger than a portable typewriter, unit incorporates two direct-reading meters giving readings of frequency (rpm) and amplitude of vibration (displacement). Two external components, a pickup and a strob lamp, are simply plugged into instrument when in use.

Four-page bulletin illustrates features, applications, and components of unit. "Model Six Fifty Two Vibratron" is issued by International Research and Development Corp., Dept. CP, Columbus, Ohio. When inquiring specify CP 7804 on handy form, pages 2 and 3.

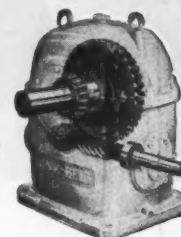
# Which of these speed reduction jobs is yours?

High-ratio reduction with right-angle takeoff?

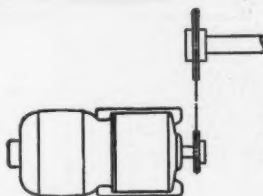


Get a LINK-BELT Worm Gear Drive

Reduction ratios: 3.1:1 to 8000:1. Torque: 1400 to 123,000 in. lbs. Output shaft rpm: 0.22 to 564. Drawing shows motorized P.I.V. variable speed and worm gear drives direct-coupled.

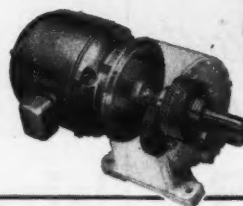


Restricted space for mounting?

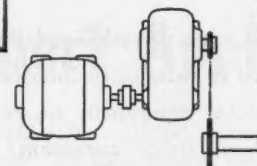


Get a LINK-BELT Gearmotor

Reduction ratios: 6.2:1 to 292:1. Hp range: 1 to 30. Output shaft rpm: 6 to 280. Drawing shows gearmotor with roller chain drive.

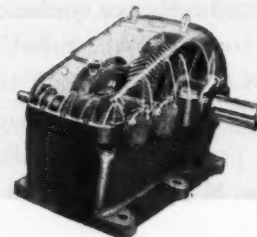


High hp with parallel shaft takeoff?



Get a LINK-BELT Herringbone Gear Drive

Reduction ratios: 2.84:1 to 318:1. Hp range: 1/2 to 1000. Output shaft rpm: 2 to 600. Drawing shows motor with herringbone gear and roller chain drives.



## Yes, LINK-BELT builds all 3

**N**O LONGER need speed reduction be the limiting factor in a design or application problem. Because no *one* speed reducer solves every reduction problem, Link-Belt builds all three—Helical, Herringbone and Worm. Now it

is only necessary to choose the right type of Link-Belt enclosed gear drive . . . and select the hp and reduction ratio that fit your requirements. You can get complete engineering information from the Link-Belt office near you.

**LINK-BELT**  
ENCLOSED GEAR DRIVES

LINK-BELT COMPANY Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 1, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa), Sydney (Australia). Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 7805 on handy form, pgs. 2-3





## Proven Protection Against Corrosion and Abrasion

"RUBBERHIDE" is a special Goodall formula for linings processed to exterior or interior surfaces of all types of metal equipment to provide long-lasting protection from corrosion and abrasion. The selected rubber or synthetic compound is inseparably bonded to the metal, in any required thickness. There is virtually no limitation as to size, shape or service requirement of the metal parts or products involved. Factory processed in Trenton, N. J., or Chicago, Ill., or applied by field crews to large or permanently installed units.

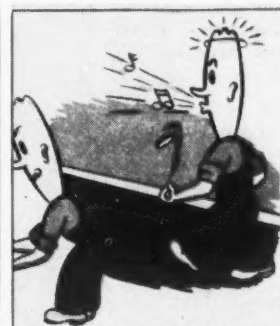
Write for illustrated Booklet, or submit details of conditions to Goodall Corrosion Control Engineers for recommendations. Your inquiry will receive prompt attention.



### GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.  
Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • Detroit • St. Paul • Los Angeles  
San Francisco • Seattle • Portland • Salt Lake City • Denver • Houston • Indianapolis • Other Principal Cities  
Goodall Rubber Company of Canada, Ltd., Toronto.

## safety



Illustrates sample picture on cover of safety test booklet. Instruction to person taking test is—" . . . on the answer sheet, cross out the squares that correspond to pictures in which a rule of safety is being broken. It may be one, two or even all three pictures that are wrong. Be sure to check each picture separately."

## Measures Employee Knowledge of Good Safety Practices

Coincident with period of use of safety test, firm's accident frequency rate went from 12.9 to 6.2

One company's safety program is based on two principles:

1. Good safety practices can be taught most effectively when the instructor knows in advance the specific safety lessons the individual needs.
2. The study of safety rules is more meaningful to the individual employee when he knows his specific areas of misinformation and ignorance.

As a result, the program has two features: a handbook of safety rules, and a non-verbal safety test. Although only latter will be reviewed here, handbook is integral part of company's program.

### Purpose

The test is aimed at determining an employee's knowledge of good safety practices. In so doing, it can accomplish several important functions in an overall industrial safety program:

By pointing up specific areas of weakness, it enables safety instructor to concentrate his efforts

in direction of greatest need.

It enables safety instructor to check efficiency of his program.

It helps employee learn more about safety by indicating the strong and weak areas of his safety knowledge.

It emphasizes to all employees that the company has an interest in their safety and welfare.

When used to retest lost-time accident employees, it re-emphasizes need to learn safety rules well.

Although primarily a tool for the safety instructor, the test can be used by employment interviewers, shop supervisors, and others interested in promoting industrial safety.

### Test Description

Test itself consists entirely of picture items — 162 in all. Each of the pictures illustrates the practice or violation of one or more safety rules. Person taking the test is required to pick out each picture in which any rule of safety is being broken. As

used by this concern, test is divided into four parts: general safety; piling, carrying, and traffic; tools; and machine operation. It may be administered either to individuals or groups.

It is most effective when used as a basis for follow-up training in good safety practices rather than as a means of screening out poor safety risks. Ideally, every employee in a plant should be able to make a perfect score on the test before the safety instructor can consider his goal accomplished. Practically, however, the test scores should be used to indicate to the safety instructor the areas of greatest need — either for a given individual or for a large group of employees.

#### Reliability and Validity

**Reliability.** The coefficients of reliability, determined by the split-halves method on 200 randomly picked cases from those who had taken the experimental form of the test are:

Pictures scored individually	.98
Pictures scored in units of three	.94

**Validity.** Distribution of scores made on experimental form of test indicate that average test score of individuals who had been accident free were significantly higher than average test score of individuals with one or more accidents.

This fact should not be taken to indicate, however, that the test be used as a screening device. Since the range of scores of the two groups overlap to a great extent, test can be at best only a very rough indicator of which employees or job applicants will have accidents. Therefore, either when used to test present employees or when used as part of a pre-hiring test battery, the test can be most effective as a starting point for safety instruction and orientation.

#### The Test and Accident Reduction

Following is a tabulation of the accident record of the firm, which employs 8000 persons, since the adoption of the test program:

Year	Frequency Rate*	Severity Rate**
1945	12.9	1.98
1946	10.4	1.71
1947	11.1	.91
1948	8.8	.93
1949	7.6	1.5
1950	8.7	1.28
1951	6.5	1.99
1952	6.2	1.52

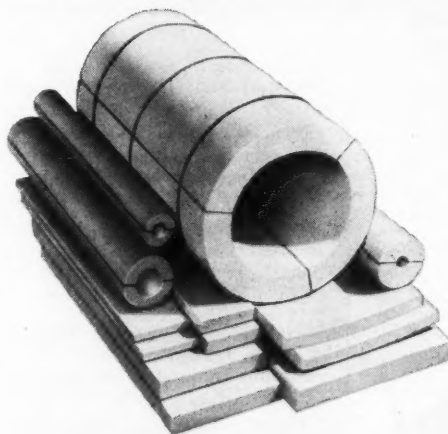
\*Number of disabling injuries per million man hours

\*\*Number of days lost (or charged) per thousand man hours

The decline in the accident frequency rate coinciding with the use of the test will be of interest to anyone concerned with promoting good safety practices. The figures cited would indicate that the use of the test — as a training as well as a testing device — probably contributed greatly toward the reduction of both the number and severity of accidents. (Test material was submitted by Science Research Associates, Inc., 57 W. Grand Ave., Chicago 10, Ill. Inquiries concerning test can be directed to Revere Copper and Brass Inc., General Industrial Relations, Dept. CP, 41 Bright St., Rome, N. Y. . . . or for more information check CP 7807 on handy form, pages 2 and 3.)



## The Right Material . . . Expert Application

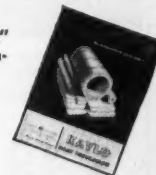


First, Kaylo Heat Insulation is *proved* a better material—hydrous calcium silicate. Its light weight, strength, water-insolubility, low conductivity and wide temperature range give you extra advantages at *no extra cost*.

Second, Kaylo distributors have the technical knowledge and experience to provide you with a complete insulating service. Their trained applicators are skilled craftsmen who do neat and efficient installation.

To be sure of getting the most out of your insulating dollars for your next job, call the nearest Kaylo distributor. Chances are you can find him listed in the yellow pages of your phone book. If not contact us and we'll give you his name.

WRITE FOR FREE BOOK—"Kaylo Heat Insulation."  
Address: Dept. N-376, Owens-Illinois Glass Company, Kaylo Division, Toledo 1, Ohio.



# KAYLO

... first in calcium silicate

...pioneered by OWENS  ILLINOIS Glass Company

MAIN OFFICE: TOLEDO 1, OHIO—KAYLO SALES OFFICES: ATLANTA • CHICAGO • HOUSTON • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS

When inquiring check CP 7808 on handy form, pgs. 2-3



# Sicon in colors withstands 500°F

SICON, THE ORIGINAL  
SILICONE HEAT-RESISTANT  
FINISH, IN GLEAMING WHITE AND TAN  
PROTECTS SURFACE OF HOME INCINERATOR

*Here's what the makers of  
Calcinator say about SICON*

"In keeping with the high standards we wished to attain for Calcinator, we chose 'Sicon'.

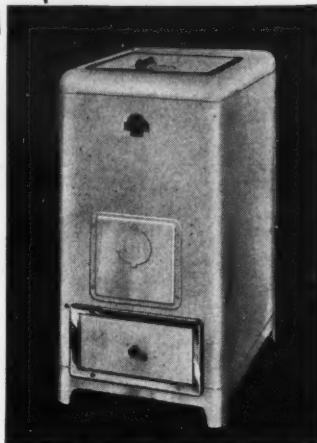
Under rigid perfection tests 'Sicon' was found to have:

1. High resistance to heat when exposed to temperatures ranging from 400 to 500°F.

2. Exceptional color as well as gloss retention qualities.

In addition, only 'Sicon' had good inherent qualities of adhesion and film stability."

W.M. Milbourne, Sales Mgr.,  
Calcinator Division  
Valley Welding & Boiler Co.,  
Bay City, Michigan



Deluxe Calcinator, the home incinerator so smart looking that it can be placed right in the kitchen. Finished in SICON White.

## SICON STANDS UP WHERE OTHER HEAT-RESISTANT FINISHES FAIL

In case after case, for product after product, SICON has proved to be the *only* heat-resistant finish to pass all tests—in the laboratory and on the production line. Sicon, in smart decorative colors, now opens up a new horizon for design engineers, because only Sicon makes it possible to combine "eye appeal" with retention of color and gloss in the presence of sustained heat.

No matter how rigid your heat-resistant finish requirement, try Sicon, the original silicone-base finish that has revolutionized product finishing wherever high temperatures pose a problem.

Write for brochure  
and complete  
engineering details.



Standard Calcinator, for utility room or basement location, features latest advances in incinerators. Finished in SICON Tan.

# Sicon

Silicone-Base Heat-Resistant Finish

VARNISHES • ENAMELS • LACQUERS • SYNTHETICS

When inquiring check CP 7809 on handy form, pgs. 2-3

manufactured exclusively by  
**MIDLAND**  
INDUSTRIAL FINISHES CO.  
Waukegan, Illinois

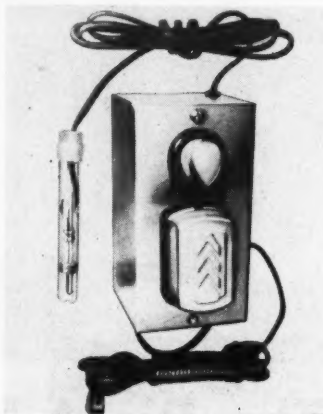
## SAFETY

**Device keeps 24 hr vigil  
to maintain correct  
operating temp . . .**

sounds alarm when unsafe limits are reached

**Uses:** For constant surveillance of safe temperature range in sterilizers, refrigerators, storage bins, and similar locations.

**Features:** Automatic alarm system provides 24 hour watch over temperature variations and sounds warning buzzer when unsafe temperature limits are reached within the installation.



Temperature-sensitive tube is placed near object to be protected from harmful temperature variations

**Description:** Thermo-Alarm consists of sensitive thermostat enclosed in hermetically-sealed, frost-free tube that is placed in cabinets or near material to be protected. Temperature changes cause thermostat to actuate mechanism which sounds buzzer. A switch turns buzzer off while adjustments are being made.

Operating mechanism is contained in metal box, 3 x 3 x 5 3/4". It functions from any 110-115 v AC, 60 c, outlet and can be fastened to walls or partitions by single screw.

Thermostats are calibrated from 0 to 50°F or to specified temperatures for special applications ranging from minus ten up to plus three-hundred degrees Fahrenheit.

(Thermo-Alarm is manufactured by Mack Electric Devices Inc., Dept. CP, Wyncote, Pa. . . or for more information check CP 7810 on handy Reader Service slip, pages two and three.)



## This test usually saves 40% to 70% on glove costs

(with improved safety and employee attitude)

On many industrial operations, modern gloves made of coated fabric have largely replaced canvas, leather and unlined rubber gloves. Improved coatings, now available, far exceed these older materials in their resistance to cutting action, abrasion, oils, greases, acids, caustics, solvents, degreasants and extremes of temperature.

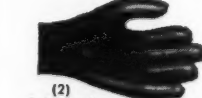
In addition to cost savings averaging 40% to 70% (as much as 30c per man hour saved under severe conditions) these job-fitted gloves solve many problems—from avoiding finger-marks on polished laminates to preventing acid burns in plating baths—from repelling sharp slivers in broach coolant to providing a firm grip on sheet glass.

### Make This Simple Test at Our Expense

Send a brief description of your operation, materials handled and temperature condition. Without charge, we will recommend and supply sample job-fitted gloves and procedure for testing on-the-job. As world's largest maker of coated industrial gloves our laboratory also develops special gloves to meet special problems. Address Safety Engineering Service, Edmont Manufacturing Company, 1204 Walnut St., Coshocton, Ohio.



(1)  
Reinforced  
Neoprene (Neox)



(2)  
Reinforced  
Plastic (Durox)



(3)  
Natural  
Rubber

## Edmont job-fitted work gloves

Recommended and supplied by leading industrial distributors

When inquiring check CP 7811 on handy form, pgs. 2-3

### High intensity ultraviolet lamp easily installed in regular air ducts . . .

sterilizes any volume of air from room size to entire plant air conditioning system

**Uses:** Sterilize circulating air to prevent product contamination.

**Features:** Lamp can be installed in multiples as well as single to sterilize any volume of air — from room size to entire plant air conditioning systems.

**Description:** Safe-T-Aire is a high intensity ultraviolet lamp. It can be easily installed in regular air ducts, and its germicidal power has been demonstrated in hospital contagious wards and operating rooms.

(Manufactured by Hanovia Chemical & Manufacturing Co., Dept. CP, 92 Chestnut St., Newark 5, N.J. . . . or for more information check CP 7812 on handy form, pages 2 and 3.)

### Anti-fog liquid cleans and treats in one application . . .

spraying from polyethylene bottle is usually sufficient for the whole day

**Uses:** Prevent fogging and steaming of industrial goggles, shields, masks, windows, correction glasses, and hoods.

**Features:** Ease of application, economy, and one "shot" is stated to be effective generally all day.

**Description:** Fog-Free contains silicones but no alcohol or glycerine. It is packaged in 4-oz polyethylene bottles and a drop is all that is required on a spectacle lens; a quick spray suffices for larger surfaces.

Also available in bulk units (1-qt and 1-gal) for refilling dispensers in goggle cleaning stations.

(Product of Industrial Products Co., Dept. CP, 2834 N. Fourth St., Philadelphia 33, Pa. . . . or for more information check CP 7813 on handy form, pages 2 and 3.)

### Headgear exceeds code for impact resistance . . .

cradle of fiber glass hat can be easily and quickly adjusted to fit

**Uses:** Indoor and outdoor safety hat.

**Features:** Reportedly meets ASA Code for dielectric breakdown and exceeds ASA Code for impact resistance.

**Description:** Saf-Hed-Hat is fabricated of fiber glass, and the cradle can be quickly and easily adjusted to fit all head sizes and complies with Federal specifications.

(Offered by United States Safety Service Co., Dept. CP, 1215 McGee St., Kansas City, Mo. . . . or for more information check CP 7814 on handy form, pages 2 and 3.)

## How Much Would It Cost You...



## If This Happened To Your TURBINE

\$5,000? \$10,000? \$25,000? \$50,000?

Replacement of turbines is costly . . . even in the case of minor repairs, labor, parts, and downtime costs soon mount up. To go under the assumption that the installation of superheaters in a boiler eliminates the need for purifier protection is dangerous. It did not protect this turbine which is almost a total wreck because of carry-over. Particularly during startup and periods of faulty boiler operation such as occurred above, turbines should have purifier protection.

You owe it to your plant management to insist upon protection of every turbine with a Hi-eF Purifier. These high efficiency units cost no more than ordinary separators yet assure you of the delivery of clean, dry steam of

better than 99.95% quality, to your turbines. A Hi-eF Purifier removes virtually all line scale, water and mist and dirt that might build up and erode turbines, reciprocating engines and the like.

The use of Hi-eF Purifiers ahead of turbines and other steam using equipment and in boilers is a worth-while investment . . . much less than the cost of repairs and downtime. Performing at all times at high efficiency without the use of moving parts, a Hi-eF Purifier requires no maintenance. Don't chance a costly breakdown. Write, wire or phone today for information on protecting your steam-using equipment.



WATCHDOGS OF STEAM • AIR • GAS • VAPOR  
PIPELINES AND EQUIPMENT



UPFLOW  
INTERNAL PURIFIER



LARGE LINE  
TYPE PURIFIER



DOWNFLOW  
INTERNAL PURIFIER



RECEIVER  
TYPE  
PURIFIER

THE V. D. ANDERSON COMPANY

1959 West 96th Street • Cleveland 2, Ohio

Please send information on the following type of purifiers:

☐ Line Type ☐ Internal Upflow ☐ Internal Downflow ☐ Receiver

Name \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

BY THE MAKERS OF SUPER-SILVERTOP STEAM TRAPS

When inquiring check CP 7815 on handy form, pgs. 2-3



# CESCO RIGHT... before your Eyes!

## New, Larger COVER GOGGLES

fit over ALL modern glasses...



**New CESCO Cover Goggles**  
fit well over all popular styles of glasses—even over extreme types such as these.

### FEATURES

**Lightweight, sturdy plastic** with contoured edges. Weight is well-distributed for comfort and safety.

**LENS VENTILATORS**  
Slots in edges of lens frames and rings are offset to baffle air flow.

**HEADBANDS**  
Three types, all fully adjustable—Comfort King round rubber, flat rubber, or elastic.

**SIDE SHIELDS**  
Baffled type for welders. Perforated for chipping and grinding.

**The NEW CESCO series 548 and 549** Cover Goggles are 20% larger than former cover goggles and will fit comfortably over all popular styles of men's or women's glasses. Newly designed, contoured edges eliminate pressure points on the nose and seal out flying particles or light flashes. Larger air space within goggles reduces fogging.

Screw-type retaining rings permit quick lens change from front. Standard 50mm lenses set flush with rings to deflect flying objects. Chippers style has indirect ventilation through slotted lens rings and direct ventilation through perforated side shields. Welders and dust models have indirect ventilation through side shields. Simplified bridge adjustment. Choice of 3 adjustable headbands: elastic, flat rubber or Comfort King round rubber.

For a really modern goggle, there is nothing better than the No. 548 CESCO Cover Goggle. It is "Right...before your eyes!"

See or write your CESCO safety equipment distributor for full details



CHICAGO EYE SHIELD COMPANY • 2316 Warren Blvd. • Chicago 12, Ill.

## CESCO FOR SAFETY

OFFICES IN: Atlanta, Birmingham, Boston, Buffalo, Cincinnati, Cleveland, Columbus, Detroit, East Orange, Houston, Kansas City, Knoxville, Little Rock, Los Angeles, Mexico City, D. F., Milwaukee, Montreal, Philadelphia, Pittsburgh, Salt Lake City, San Francisco, Spokane, St. Louis, St. Paul, Toledo, Tulsa

When inquiring check CP 7816 on handy form, pgs. 2-3

## SAFETY

**Fire-quenching spray shoots out as well as downward over wide area...**

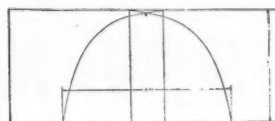
and gives fewer sprinklers extinguishability of greater numbers

Basic design of automatic sprinkler heads as a means of fire protection has remained unchanged since their first practical application in this country in 1878. In the meantime, industrial developments and improved processing resulted in placing higher value on buildings and equipment and with subsequent increased insurance costs. Improved methods of fire protection were needed.

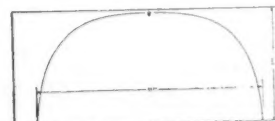
Investigations leading up to the development of a vastly improved fire fighting sprinkler were begun in 1947 and hundreds of full-scale fire tests were conducted. Fire conditions of all kinds were simulated and extinguishing methods involving various types of and arrangements of approved sprinklers and spray nozzles were employed.

It was learned that for best cooling, the discharge pattern should be solid, extending laterally and downward, and should be a mixture of water drops of varying sizes, including mist-fine spray. (Heretofore, approved devices were designed to discharge 60 per cent of the water upward against the ceiling.)

With the foregoing data to serve as a guide, one manufacturer designed a device in two styles—



CONVENTIONAL UPRIGHT SPRINKLER HEAD



NEW APPROVED SPRAY SPRINKLER HEAD

upright and pendant—modified from previously approved sprinklers so as to provide more efficient use of water for fire protection.

Covering an approximate area of 20', manufacturer's Spray Sprinklers permit wider spacing, thus reducing the number of heads required.

Other uses listed are: 1) as a replacement for other types of automatic sprinklers where the fire hazard approaches the limit of ordinary sprinkler capacity; 2) serviceable as substitution for ordinary types of sprinklers where existing water supply is limited, or where present piping and sprinkler spacing is sub-standard; 3) where ceiling obstructions require additional sprinklers.

("Automatic" Spray Sprinklers are manufactured by Automatic Sprinkler Corp. of America, Dept. CP, Youngstown, Ohio... or for more information check CP 7817 on handy form, pages 2 and 3.)

### Eliminates common hazard of boiler room operations

Water level indicator, a 12" dial indicator, operates on differential pressure principle to provide a safe and simple method of eliminating a common hazard of boiler room operations. It can be

WORKS WHERE OTHERS WON'T

for  
**SUBMERGED OILLESS BEARINGS**



WITH CONFIDENCE

- OPERATE DRY or SUBMERGED IN DYES, PLATING, CLEANING & CHEMICAL SOLUTIONS, GASOLINE, FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE—even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS & OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

### GRAPHITE METALLIZING CORPORATION

1004 NEPPERHAN AVENUE • YONKERS, NEW YORK

Please send data on Graphalloy SUBMERGED OILLESS BEARINGS.

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

When inquiring check CP 7818 on handy form, pgs. 2-3

CHEMICAL PROCESSING

## HERE'S REAL PROTECTION

plus long-wearing  
economy

**Sawyer** protective  
clothing is

- \*Highly resistant to all common chemical solutions
- \*Not affected by grease, oil or gasoline
- \*Positively will not crack, blister or peel

All Sawyer protective clothing is made with top quality base fabric *saturat*on-coated with 6 coats of genuine DuPont Neoprene Latex\*. It's tough as mulehide, too . . . takes endless rubbing, scraping, snagging and still gives full protection.

Also: Three-quarter and long coats, coveralls, aprons and many other styles. All clothing made in black and yellow.

Styles  
illustrated  
50-00 Jacket  
51-00 Pants  
53-00 Hat



\*Sawyer fabrics are coated by  
The Brunens Company, a division of

**THE H.M. SAWYER  
& SON CO.**

FROG BRAND

CAMBRIDGE  
MASSACHUSETTS

When inquiring check CP 7819  
on handy form, pgs. 2-3

## SAFETY

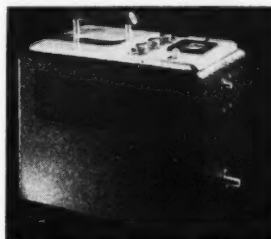
mounted on a panel or pipe standard, bringing the dial to convenient eye level and enabling operator to be constantly informed of water level conditions. Unit is available in various standard ranges from 0-20 and 0-200 inches of water.

Bul 392, which describes various units for measurement of liquid level conditions, is issued by The Foxboro Co., Dept. CP, Foxboro, Mass. When inquiring specify CP 7820 on handy form, pages 2 and 3.

### Portable mercury detector is on the way . . .

AEC-developed instrument measures vapor content in air with very high accuracy

Presenz 3EPS mercury vapor detector is named after its inventor, C. S. Presenz of the University of California Radiation Laboratory in Berkeley. Many industrial applications are expected to be found for the detector because it is economical to operate, highly accurate, and portable. Instrument weighs 37 pounds, measures 16 x 9 x 5 inches.



To read directly in milligrams  
mercury per cubic meter

Operation is based on passage of ultra-violet light through sample and reference chambers. Vapor drawn into sampling chamber retards the light, causing an electrical imbalance which can be measured by photo cells. Instrument can be calibrated directly in terms of milligrams vapor per cubic meter. Detector has an audio alarm which works when level of vapor exceeds permissible limits. This alarm is accurate to within 1 per cent of setting. Unit will operate for 14 continuous hours on one charging of its 6-volt wet battery.

(Licenses to manufacture Presenz 3EPS are being granted on a non-exclusive, royalty-free basis. Application for license should be submitted to Chief, Patent Branch, U. S. Atomic Energy Commission, Washington 25, D. C.)

### Tells how and where to apply corrosion-resistant lining

Fully illustrated bulletin presents complete history of lining and covering material. Composition, physical forms, physical properties, uses, and method of application of material are discussed in twelve-page booklet. Chemical resistance is summarized in extensive tables. Comparisons with various types of lining materials are made.

Bul TL-526 is issued by The U. S. Stoneware Co., Dept. CP, 60 E. 42nd St., New York 17, N. Y. When inquiring specify CP 7821 on handy form, pages 2 and 3.

at last  
an inexpensive  
pilot plant



### BRIGHTON Model A-110-A

can now be used for organic reactions  
in addition to making Synthetic Resins.

A moderate investment now gives you  
versatility and accurate control for your product.

The new electrically heated unit made of Type 316  
Stainless Steel, consists primarily of a 10 gallon  
capacity reaction kettle, primary reflux condenser,  
secondary tubular condenser, and a  
decanter and receiver.

The kettle has a variable speed agitator, cooling unit  
and charge hole. The decanter is designed to separate  
both heavier and lighter than water liquids. Decanted  
liquid can be directed to kettle as a reflux, or to the receiver as  
desired. An Electronic Controller regulates the heaters from  
the kettle temperature.

This unit is designed for vacuum to 100 p.s.i. pressure; a similar unit  
is available for vacuum to 40 p.s.i. pressure. Variations are available  
with jacketed kettle for liquid or vapor heating. Production  
units are also available.

Write Dept. D today for Brighton Bulletin No. 40



**BRIGHTON** copper works inc.

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DIVISIONS: F. C. DECKBACH SONS CO., HAMILTON COPPER & BRASS WORKS, BUCYRUS KETTLE WORKS  
est. 1914 • engineers • metalsmiths • machinists • designers, producers of chemical processing equipment

When inquiring check CP 7822 on handy form, pgs. 2-3



*He scoffed at  
safety breathing  
equipment . . .*



*.. but he finished the job wearing a*

**Scott Air-Pak**  
(TRADE MARK)



"Scott Air-Pak GIVES  
ME PLENTY OF AIR,  
KEEPS ME FEELING  
COOL INSIDE HOT  
TANKS!"

An Eastern dye plant needed a painting job done on the inside of a large tank. Although the paint was of a particularly obnoxious compound, the man hired for the job scoffed at the offer of safety breathing equipment. He entered the tank, only to stay inside for six minutes. Making a second attempt to paint the interior without protection, he lasted only one-half minute. The third time he put on a SCOTT AIR-PAK with a hose attached to an air cylinder and stayed in the tank for three hours, completing the entire job. Questioned as to SCOTT AIR-PAK's operation, he said "I never knew that working inside of a hot tank could be so cool and comfortable — and safe. I'm taking no more chances!"

Hundreds of other industrial plants throughout the country have discovered that using SCOTT AIR-PAKS is the safest, most efficient way to complete work in hazardous atmospheres quickly, easily, economically.

Call in your Safety Equipment Dealer or  
**WRITE TODAY**  
for full information.



**SAFETY EQUIPMENT DIVISION  
SCOTT AVIATION CORP.**

242 Erie Street Lancaster, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities  
Export: Southern Oxygen Co., 157 Chambers Street, New York 7, N. Y.

When inquiring check CP 7823 on handy form, pgs. 2-3

## SAFETY

### **Applies drugs under pressure for relief of respiratory conditions . . .**

effects distribution of aerosols such as broncho-dilators and bacterio-static agents

**Uses:** Treatment of bronchial asthma, silicosis, bronchiectasis, emphysema, pneumonitis, chronic bronchitis, and other related fibrosis diseases where continued administration of aerosols is indicated. By applying aerosols such as broncho-dilators and bacterio-static agents under intermittent positive pressure, ventilator effects distribution of the drugs throughout the respiratory tract.

**Features:** Ease of operation and comfortable breathing action. Patient can relax and receive the intermittent positive pressure without noticeable effort on inhaling or exhaling.

**Description:** MSA Pulmonary Ventilator is an oxygen distributing unit with the following components: high pressure reducing valve, high and low pressure gages, a valve responsive on inhalation and fitted with an indicating gage, a single breathing hose with mouthpiece and exhalation valve, and a separately connected nebulizer with rubber tubing and control valve.

For the convenience of the patient, a flexible, adjustable metal tube supports the breathing hose and mouthpiece at any desired position during inhalation an exhalation.

(Available from Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pennsylvania . . . or reader may secure more information about this particular development by checking CP 7824 on convenient Reader Service slip, between pages two and three.)

### **No need to search high and wide . . .**

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with CHEMICAL PROCESSING many years ago to help busy men like you!

THE EDITORS

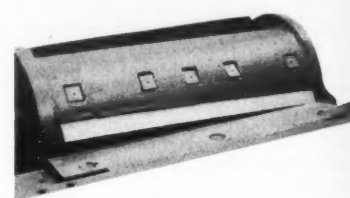
### **Large goggles fit over glasses, reduce fogging . . .**

standard 50 mm lens are seated flush with rings in order to deflect flying objects

Recent series of goggles are about 20% larger than previous models, which enables them to fit comfortably over modern glasses. Wider bearing surfaces in plastic frames eliminate pressure points and provide a seal to exclude flying particles or light flashes encountered by welders and chippers. Fog reduction is accomplished by indirect ventilation through slotted lens rings and direct ventilation through perforated side shields. Larger air space within the goggles also contribute to decreased fogging.

# SHEARING ACTION

## **OF THIS CUTTER MAY SOLVE YOUR CUTTING PROBLEM**



Knives on the revolving cylinder of the cutting element of our cutters engage the bed knife at an angle, dictated by our long experience in cutting materials of various characteristics.

As a result, the full power of the moving blades is concentrated at a single point, progressively along the length of the bed knife.

Let us demonstrate this shearing feature to you on a sample of the material you have to cut.

### **TAYLOR-STILES CUTTERS**

include machines that will cut sheet stock into uniform pieces of predetermined size and shapes, continuous strips or fibers into uniform lengths, and many other materials in various ways required for processing.

**TAYLOR-STILES**  
and Company  
CUTTING MACHINES & KNIVES

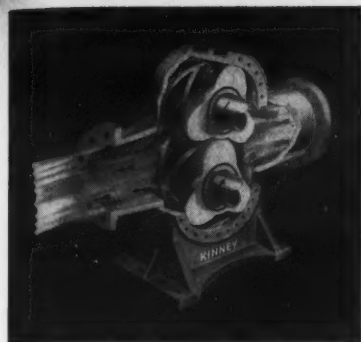
20 BRIDGE STREET

RIEGELSVILLE,

NEW JERSEY

When inquiring check CP 7825  
on handy form, pgs. 2-3

CHEMICAL PROCESSING



## GET THE PUMP THAT'S BUILT FOR FUEL OIL TRANSFER

Look into a Kinney Model HQA Heliquad Rotary Pump and you'll see why so many process industries and power plants use this pump for fuel oil transfer. Everything about Kinney Model HQA is built for dependable and efficient performance: steep helical pumping rotors that deliver liquids smoothly and steadily, positive clearances within the pumping chamber to eliminate friction and wear, external heavy-duty anti-friction bearings and timing gears with separate lubricating system, rugged construction to reduce maintenance costs and insure smooth, continuous operation year after year.

Send coupon for complete information about Kinney Rotary Liquid Pumps — or ask to have our engineer call to discuss your pumping problems. Kinney Manufacturing Co., Boston 30, Mass. New York, Chicago, Detroit, Cleveland, Atlanta, Philadelphia, Pittsburgh, Johnstown (Pa.), Charleston (W. Va.), Los Angeles, Houston, New Orleans, San Francisco, Seattle, and foreign countries.

**KINNEY  
MANUFACTURING  
COMPANY**

3573 Washington Street  
Boston 30, Mass.

☐ Please send Bulletin L51 describing Kinney Liquid Pumps.

☐ Please have your representative call.

My pumping problem involves.....

NAME.....

COMPANY.....

ADDRESS.....

SUBSIDIARY OF THE NEW YORK AIR BRAKE CO.

When inquiring check CP 7826  
on handy form, pgs. 2-3

## SAFETY

Lenses of series 548 and 549 goggles are replaced from the front. Standard 50 mm lenses are seated flush with rings to deflect flying objects. Adjustable rubber or elastic headbands are offered with goggles.

(Products of Chicago Eye Shield Co., Dept. CP, 2300 Warren Blvd., Chicago, Ill. . . . or for more information check CP 7827 on handy form, pages 2 and 3.)

### Emergency shower on wheels carries own water . . .

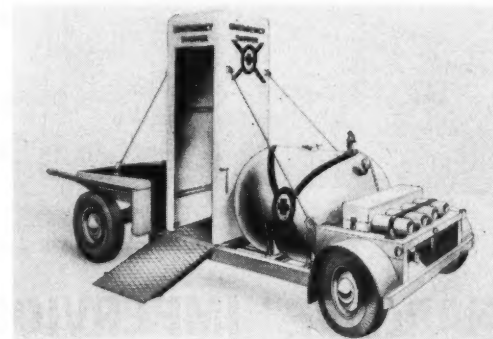
to comply with regulations requiring showers in areas where hazardous operations are conducted

**Uses:** As self-contained shower capable of being transported to areas where hazardous conditions exist for workers and where previously no water supply has been available. This would apply to installations such as oil fields and refineries, chemical plants, loading docks, etc.

Shower is said to be very efficient in wetting all parts of clothing and body in matter of seconds. It is designed to rapidly quench fire or dilute and remove harmful chemicals contaminating clothing or body.

**Features:** Shower unit carries its own water supply and is mounted on a trailer so that it may be easily moved to any location.

**Description:** Mobile shower includes all necessary valves, gages, and regulator. Compressed air in flasks serves as propellant to expel water from tank on trailer. Water can be discharged at approximately



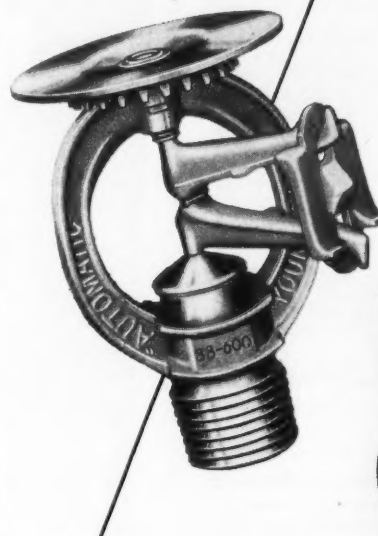
Emergency shower rolls to where it's needed

50 gpm through the overhead spray, two sprays for eyes and face, four bottom sprays directed upward under coats, and four additional streams of water which are directed onto feet from holes that also serve as drains.

The galvanized tank is insulated with two inches of Fiberglas and is filled by removing a lever-handled screw cap. Where desired, tank can be equipped with immersion electrodes for heating.

(Shower is product of Logan Emergency Showers, Inc., Dept. CP, P. O. Box 111, Glendale, Calif. . . . or for more information check CP 7828 on handy form, pages 2 and 3.)

# Terrific! is the word for



## "Automatic" SPRAY Sprinklers

**TERRIFIC . . .** That's the word that chemical processors use in describing the new "Automatic" SPRAY Sprinkler.

It's a "Sure Fire Killer", designed for quick action and maximum effective distribution of water.

Property owners get protection-PLUS in all types of buildings with this vastly improved fire fighter that can be installed on both exposed and concealed piping systems. And . . . "Automatic" SPRAY Sprinklers are easily interchangeable with obsolete devices . . . cost no more than old style sprinklers.

This important advancement in the science of fire safety is further reason why "Automatic" Sprinkler is universally recognized as **FIRST IN FIRE PROTECTION!**

New literature available on request

# "Automatic" Sprinkler

UL LISTED AND  
FM APPROVED



**CORPORATION OF AMERICA • YOUNGSTOWN, OHIO**

OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

When inquiring check CP 7829 on handy form, pgs. 2-3



**Visual inspection provided  
on dry chemical fire  
extinguisher . . .**

recharge cylinder simplifies nitrogen pressurizing

**Uses:** Provides dry chemical spray to combat oil, solvent, or other flammable liquid fires.

**Features:** Gage shows amount of dry chemical contents used, since discharge of chemical contents is in direct proportion to loss of pressure. Tempera-



Fire crew attack oil-solvent flame using Safe-T-meter extinguishers

tures as low as  $-40^{\circ}\text{F}$  have little effect on efficiency of Safe-T-meter extinguisher. Extinguisher discharges immediately upon actuation, without usual time lag common to dry chemical units.

**Description:** Safe-T-meter extinguishers are available in capacities from five to 30 lb. Dry chemical is pressurized by nitrogen at approximately 350 psi. Valve and bottle are only two parts of extinguisher, which may be recharged without tools by simply using recharge cylinder. Unit is operated by raising lock lever and squeezing the handle.

Manufacturer reports that as long as dry chemical contents are pressurized by gas, contents will not cake, pack, or deteriorate. Extinguisher may be used intermittently if locking lever is closed after each discharge. Approximately 50 to 70% of the contents will be discharged, even when extinguisher is operated in upside-down position.

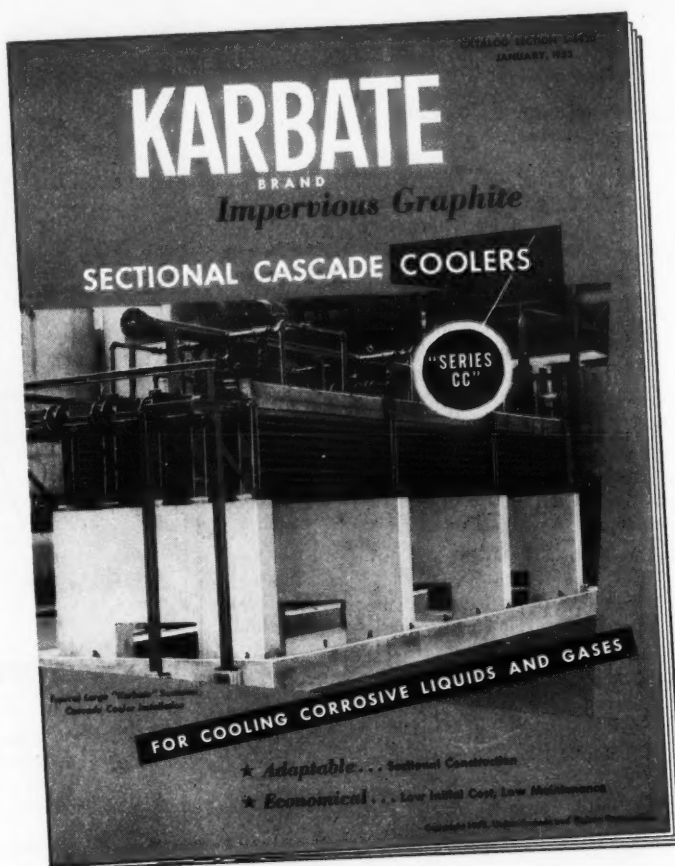
(Product of Safety First Products Corp., Dept. CP, 170-175 Saw Mill River Rd., Elmsford, N. Y. . . . or for more information check CP 7830 on handy form, pages 2 and 3.)

**Illustrated booklet tells story  
of industrial safety program**

Comprehensive, intensive safety program of large corporation in chemical processing field is the subject of informative bulletin. Using format of experiences of a typical new employee, booklet presents description of various factors and methods involved in conducting of employee safety program in various types of industrial installa-

## NATIONAL CARBON OFFERS

# GREATER VALUES IN...



## NEW "SERIES CC" "KARBATE" BRAND SECTIONAL CASCADE COOLERS

- HIGH HEAT TRANSFER RATE
- LOW INITIAL COST
- HIGH COOLING WATER CAPACITY
- TYPE SN ARMORED CONNECTIONS
- RADIUSSED RETURNS FOR LOW PRESSURE DROP
- REDWOOD WATER GUIDE STRIPS
- "TEFLON" GASKETS
- THREE STANDARD MODELS AVAILABLE FROM STOCK

## ...ALL "KARBATE" IMPERVIOUS GRAPHITE BRAND EQUIPMENT GIVES YOU:

- OUTSTANDING CORROSION RESISTANCE
- COMPLETE IMMUNITY TO THERMAL SHOCK
- FREEDOM FROM METALLIC CONTAMINATION
- LONG LIFE—LOW MAINTENANCE

# ...A CONSTANTLY IMPROVING LINE

Specify "National" Carbon and Graphite and "Karbate" Impervious Graphite Equipment for Processing, Conveying and Storing Corrosive Fluids.



## HEAT EXCHANGERS

Wide variety of standard and custom-built models in time-proved designs. Shell and tube, concentric and immersion types available in stock sizes. Catalog Sections S-6620, S-6670, S-6740, S-6750.

## PUMPS

The centrifugal pump for handling corrosive fluids. Rugged, trouble-free design. Handling capacities to 800 G.P.M. Catalog Section S-7200.

## PIPE, FITTINGS and VALVES

For industry's toughest fluid conveying requirements. Easy to install and maintain with simple hand tools. Catalog Section S-7000.

## BRICK

Accepted material for lining tanks, towers, digesters and other vessels containing corrosive chemicals. Catalog Section S-6210.

## GROUND ANODES

"National" Graphite Ground Anodes for cathodic protection of buried or submerged metal structures. Catalog Section S-6510.

## STEAM JETS

For heating and agitating corrosive solutions by direct injection of steam. Catalog Section S-7300.

## TOWERS

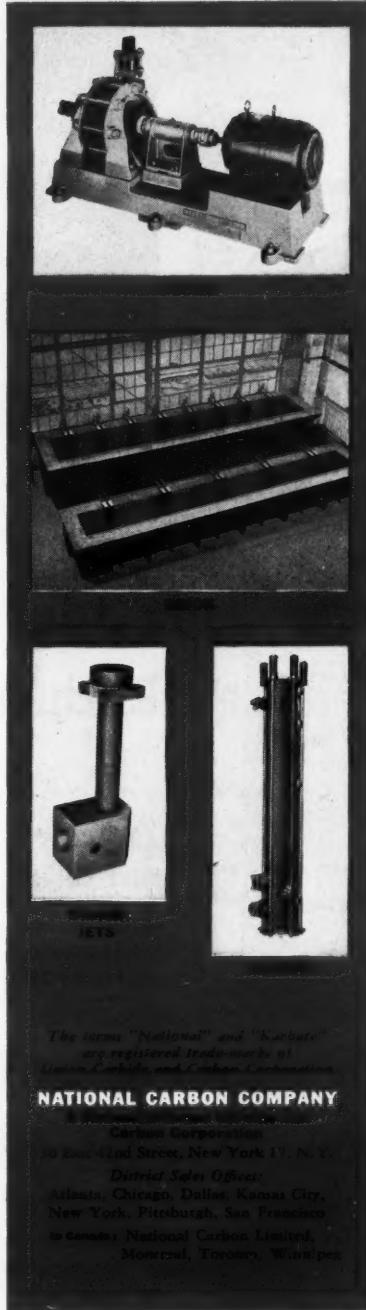
For absorption, fractionation and scrubbing. Easily erected from standard monolithic sections and components. Catalog Section S-7350.

## HCL COMBUSTION CHAMBERS

Versatile, standard equipment for hydrogen chloride synthesis. Burns moist gases. Simple in operation. Catalog Section S-7530.

## HCL ABSORBERS

Standard and custom-built models to meet any hydrochloric acid production requirement. Catalog Section S-7430.



## Fast emergency control provided by piston operated quick opening valve . . .

flexibility permits operation of many valves from one set of controls

**Uses:** Applications for the piston valve range from opening water into quench lines, sprinkler, spray, or fog systems, to dumping process vessels to outside storage in time of plant fire.

**Features:** Speedy emergency control action is furnished by piston operated quick opening valve. Unit is also highly flexible. Any number of valves may be operated from one set of controls. They may also be closed by remote control. Operation may be manual or in combination with fire fused seals, pneumatic controls, or open or closed circuit solenoid. Since valve closes against line flow, no line shock results.

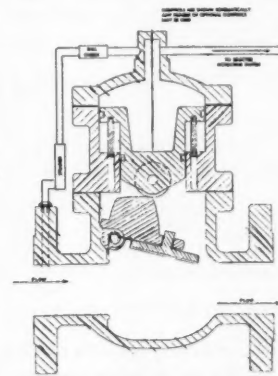
**Description:** When the piston valve is in a closed position, a positive closure is assured since its disk is faced with vulcanized specially prepared Hycar. Quick action is made certain through line pressure

exerting full force on valve disk. This forces the valve to an open position when piston pressure is released. Any of the remote or manual controls will effect the release.

Piston valve is said to provide a solid advance in propane and butane fire fighting technology. Here it permits vapor liquid dumping at pressures below relief valve settings, thus preventing rupture of over-heated vessels by reduced pressure.

Units may be installed in any position in the line, from full right side up to full right side down. Dimensions are identical to manufacturer's other valves in same line, although heights and weights are slightly greater. Standard valves in this series are rated at 250 psi.

(Sentry piston operated quick opening valve is product of McRae Corp., Dept. CP, 621 S. Spring St., Los Angeles, Calif. . . or for more information check CP 7833 on handy Reader Service slip, pages 2 and 3.)



Cross-sectional view of quick opening valve

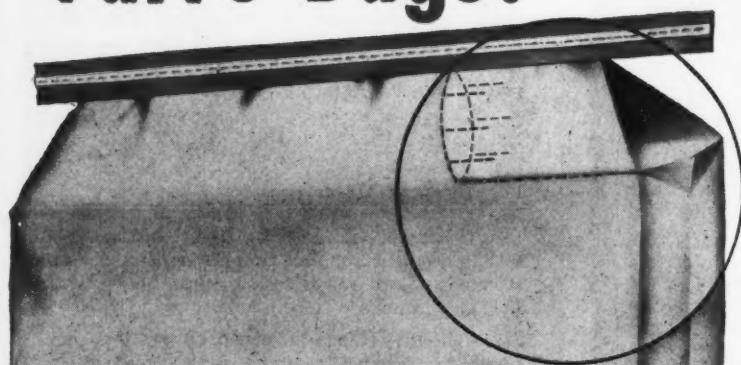
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30 East 42nd Street, New York 17, N. Y.  
District Sales Offices:  
Atlanta, Chicago, Dallas, Kansas City,  
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Sole Agents: National Carbon Limited,  
London, Toronto, Winnipeg

When inquiring check CP 7831 on handy form, pgs. 2-3



The newest, best multiwall bags  
for valve-packing your fertilizer...

# Bemis B-FLEX Valve Bags!



You should switch to Bemis B-FLEX promptly because of...

1. **LOWER BAG COSTS.** You'll save up to \$4 per thousand compared with conventional inner-sleeve valve bags.
2. **LOWER PRODUCTION COSTS.** Faster handling on your packing machines.
3. **FASTER PACKING.** Are jam-ups a problem? Not with Bemis B-FLEX. No flapping inner-sleeve to slow down material flow.
4. **UNIFORM WEIGHTS.** You can hit your weights "right on the button." Stop over-packing.
5. **CLEAN PACKAGE.** Minimum sifting.
6. **BETTER CUSTOMER SATISFACTION.** No loose, torn sleeves.

And, of course, you get the added benefit of Bemis' crisp, bright, multi-color printing—the finest printing your brand can have on multiwall bags.

Ask your Bemis Man for the complete B-FLEX story.

## Bemis



General Offices  
St. Louis 2, Mo.  
Sales Offices in  
Principal Cities

When inquiring check CP 7834 on handy form, pgs. 2-3

*packaging*



Labeler in operation on pint cans of paint. Machine can handle sizes from 1/4 pint up to one gallon. photograph are frequently used to place cans in cartons

## Labor for Labeling Paint Reduced Over 60%

Unit, which requires only four change-over adjustments, applies firmer and better fitting label as fast as operators handle cans

**PROBLEM:** At the Master Bronze Powder Company in Hammond, Indiana, the method used for labeling cans of paint was not satisfactory. Labeling procedure, which involved considerable hand operation, would not take care of increased production. Method became increasingly uneconomical as production became greater.

**Solution:** The automatic labeler shown in photograph was acquired and put into operation. An important feature of unit is that only four simple adjustments are required in changing from one size container to another. Machine is able to handle sizes ranging from 1/4 pint up to one gallon. Size adjustments are almost "vernier" in their fineness. This replaces fixed-stop system of adjustment and assures handling of any new size can.

Label is applied to the body of can with

hot pick-up glue. Temperature of glue is maintained in desired range by means of a thermostat. Paste is placed on lap of label by an endless belt which contacts it only momentarily as the can passes.

This procedure eliminates continuous contact of pasting medium with label. It is impossible for label feed to become inoperative because of an off-center position. Label platform moves upward every time about six labels have been withdrawn.

If a pack of labels comes through trimmed at an angle, a handle adjustment on machine will accommodate them. Two knurled wheels center label on can. Table

height is adjusted by single screw on operating side. Label platform can be lowered or raised with one hand.

This model automatic labeler is satisfactory for cans with ears. It is used extensively in paint plants applying full length overlapping labels which are died-out to encircle the ears. The centering device assures the holes in labels fitting the ears.

**Results:** Automatic labeling machine has reduced labor required for this operation by over 60%, according to plant manager. It labels cans as fast as operators can place them in cartons. As operated in plant, machine labels 1500 pints, 1000 quarts, or 600 gallon cans per hour. Capacity of machine is considerably higher. In addition to decreasing labor for labeling, unit has eliminated a certain amount of handling.

A tighter and better fitting label results with present labeling method than with procedure formerly used. Machine has provided good service and has required very little maintenance. Operating expenses are low. Less glue and paste are used than in past. Since machine is mobile, it can easily be moved from one location to another in plant.

Master Bronze is using labeler for line of aluminum paints, known as Broma, and for protective, rust preventive coatings, which are called Derusto.

(Model AU-611-B Burt Universal Labeler in use at plant is manufactured by Burt Machine Co., Dept. CP, Oliver and Barclay St., Baltimore 2, Maryland . . . or reader may secure more information by checking CP 7835 on handy Reader Service slip between pages 2 and 3.)

#### Speed variation of 0 to 20 rpm makes turntable ideal for production work . . .

both reversing and speed switches can be modified for foot control

**Uses:** Current applications are testing, inspecting, packaging, soldering, bronzing, welding, and assembly.

**Features:** Since unit is completely variable in speed from 0 to 20 rpm, it is an ideal production tool where work speed should vary with run, job, or operation. Turntable is controllable from a remote point, is instantly reversible. To free operator's hands and increase production, both reversing and speed switches can be modified for foot control.

**Description:** Speed of turntable can be "dialed in" just like the station control on a radio. This speed can be accelerated or decelerated at will with a twist of the wrist. Studies indicate that when a work table turns at one fixed rate of speed, production is lost if it is too slow or employee good will suffers if rate is set too fast. Variable speed produces best results.

Remote control "brain" includes an on-off switch and a tell-tale light which indicates when turntable is running. A single dial sets speed and control acceleration or deceleration. Unit has a

(Continued on next page)



## The right package helps step up sales

It's easy to boost sales of your chemical products when you package them in Continental's oblong "F" style cans. These rugged containers come in ½-pint, pint, quart, half-gallon and gallon sizes—all have convenient pouring nozzles, and the larger ones are equipped with handles. Our lithographers are masters at decorating them for sales appeal.

Before you buy another container, get the Continental story!

#### Use Continental's steel containers for bulk shipments

Container	Suggested Use
Open Head Pails.....	Adhesives
Closed Head Drums.....	Anti-Freeze
Utility Cans.....	Insecticides
50 & 65 Pound Flaring Pails.....	Soap Powder
Small Flaring Pails.....	Dry Chemicals

## CONTINENTAL © CAN COMPANY

CONTINENTAL CAN BUILDING, 100 East 42nd Street, New York 17, N. Y.

EASTERN DIVISION:  
100 E. 42nd St., New York 17

CENTRAL DIVISION:  
135 So. La Salle St., Chicago 3

PACIFIC DIVISION:  
Rust Building, San Francisco 4

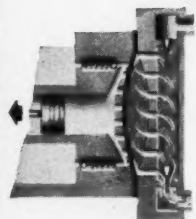
When inquiring check CP 7836 on handy form, pgs. 2-3



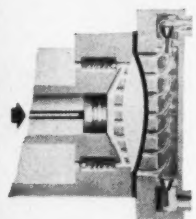
# NO STUFFING BOX



## Lapp Auto-Pneumatic PULSAFEEDER



INTAKE STROKE



DISCHARGE STROKE

No packing or other leak-likely gland can be in contact with chemical being handled by the Lapp Pulsafeeder. A hydraulically-balanced diaphragm acts as a floating partition, without mechanical load or pressure differential—assures isolation of chemicals being pumped from all working pump parts. Pumps against pressures to 2,000 lbs., at constant pumping speed—variable flow for continuous processing results from variation in piston-stroke length-controlled by instrument air pressure responding to any instrument-measurable processing variable.

**WRITE FOR NEW BULLETIN No. 300**, just issued. 24 pages of description, specifications, typical applications, flow charts. Inquiry Data Sheet included from which we can make specific engineering recommendation for your processing requirement. Write Lapp Insulator Co., Inc., Process Equipment Division, 568 Maple Street, Le Roy, N. Y.



When inquiring check CP 7837 on handy form, pgs. 2-3

## PACKAGING

(Continued from preceding page)

forward-reverse switch and a control to double or halve the speed instantly.

Turntable is equipped with a 1/15 hp motor drive operating through a heavy-duty speed reducer. Disk is 18" in diameter and is mounted on a 11" diameter casting which easily handles any load up to 200 lb. Unit is reported to have excellent timing capacity throughout entire speed range, not dropping off at low speeds. It stands 6" high and has a base plate of 24 x 20".

For short runs or uses, rental units are available and custom built modifications which may be needed to meet special requirements can be obtained from the manufacturer.

(Flexi-Turn Turntable is manufactured by Gale Dorothea Mechanisms, Dept. CP, 81-01 Broadway, Elmhurst, L. I., New York . . . or for more information check CP 7838 on handy form, pages 2 and 3.)

## No need to search high and wide . . .

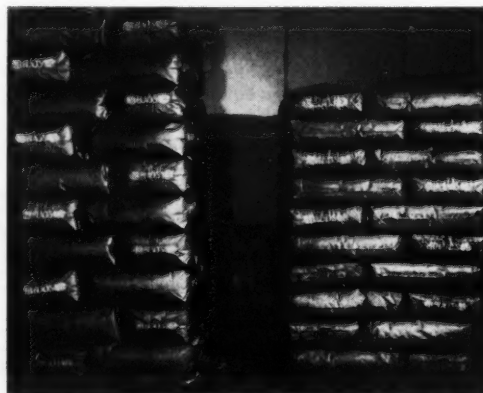
for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with the Putman Publishing Co. many years ago . . . to help busy men like you!

THE EDITORS

## Stable and compact loads result with recently designed bags . . .

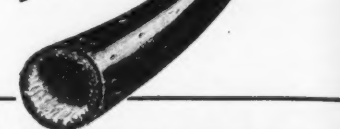
valve-type units provide volume saving of 12% and also make loads easier to handle

A recently designed bag gives more stable and compact loads of carbon black than were obtained with bags formerly used. Units are reported to provide an 18% saving in height and overall



Stability of loads through valve-type bags

# IS Corrosion YOUR PROBLEM?



## TRIANGLE Plastic PIPE



### Won't Rot, Rust Or Corrode

The problems of corrosion—or rot—or rust of pipes need never enter your mind if you use Triangle Plastic Pipe. Conditions which cause failure in ordinary pipe—electrolysis, salt water corrosion, sour crude oil corrosion, corrosive earth or sand, sulphurous water, alkalis, metallic salts and other corrosive wastes, have no effect upon this pipe. Inside and outside, Triangle Plastic pipe stays clean and serviceable.

### IN ADDITION—

it's extremely light  
it has a greater rate of flow (because of smooth walls)

it resists the action of chemicals.

It Will Save You Money To Look Into  
TRIANGLE PLASTIC PIPE

Four types available Flexible, Semi-Rigid, (Rigid High Impact, Rigid Polyvinyl Chloride available in second quarter).

Write for new Free Booklet giving complete physical and chemical properties and limitations.

## PLASTIC PRODUCTS

Division  
**TRIANGLE**  
CONDUIT & CABLE CO., INC.  
New Brunswick, New Jersey



When inquiring check CP 7839 on handy form, pgs. 2-3



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heavy equipment  
for steel mills  
since 1870:**

- Recovery plants for waste pickling acid
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- Converters from 1 to 60 tons capacity
- Cars for steel castings, pig iron and other usage
- Casting cranes
- Martin furnaces up to 200 tons capacity
- Steel mixers up to 600 tons capacity
- Charging machines and cranes
- Accessories for blast furnaces
- Complete crane and loading installations

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obligation*

**General Industrial  
Development Corporation**

**270 Park Avenue,  
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**BAMAG-MEQUIN**  
AKTIENGESELLSCHAFT

270 PARK AVE. • NEW YORK 17, N. Y.

When inquiring check CP 7840  
on handy form, pgs. 2-3

## PACKAGING

volume saving of 12% in loads. Loads are also said to be easier to handle than when they were made up with the old-style bags.

A 2500 lb load of the 50 lb valve-type bags is only 69" in height in contrast to 84" for a load of conventional bags. Other load dimensions are approximately the same. Total volume of present load is 95 cu ft contrasted to 108 cu ft. Savings will still accrue if the shipments are made up of loose bags.

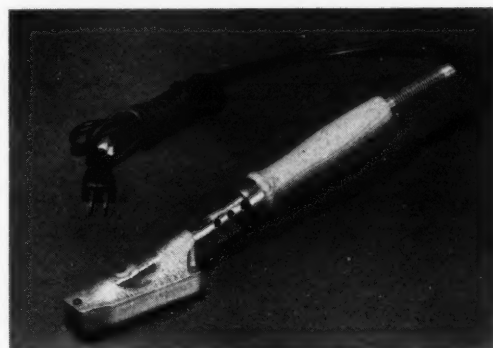
Valve-type bags are available in carload and truck-load shipments for manufacturer's channel blacks. Development work is in progress on similar package for furnace blacks.

(Announced by J. M. Huber Corp., Dept. CP, 100 Park Ave., New York, N. Y. . . . or for more information check CP 7841 on handy form, pages 2 and 3.)

### **Square toe feature speeds sealing of film wraps by use of hand iron . . .**

heat-sealing unit is durable and adaptable for applying labels also

Hand iron heat-sealing unit is stated, according to the manufacturer, to provide users with a durable, adaptable means of sealing film wraps of all types and of applying labels. Square toe is reported to be ideal for label sealing.



Sealing iron has comfortable handle for easy use

Durability is furnished by the Chromalox heating element and the dependable thermostat with wide temperature range. Unit is suitable for Pliofilm, polyethylene, acetate, and Saran. Teflon boot is available to facilitate sealing of "soft" films like Pliofilm and polyethylene.

Iron is satisfactory for steady use. It has a comfortable handle and a lengthy, strong spring to prevent fraying of cord where it leaves the handle. Unit, which has approval of Underwriters Laboratories, plugs into any standard 110 v AC outlet.

(Stimpson Super Sealer is product of Cleveland Lathe & Machine Co., Dept. CP, 5400 Brookpark Rd., Cleveland 29, Ohio . . . or for more information about this product check CP 7842 on handy form, pages 2 and 3.)



## Gaylord Boxes Are Protection in Action

Extra protection is a profitable investment that pays real dividends in reduced damage claims, and reduced packaging time.

Through every channel of distribution—from factory to warehouse to retailer, by train, truck or plane—Gaylord quality control and scientifically engineered design assures shipping containers that provide safe delivery of your product.

Gaylord's Research and Engineering Division is at your service. Check with sales office nearest you for latest developments in packaging for your industry.



*Their unseen quality gives you  
an extra margin of safety.*

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In Canada—331 Bartlett Ave., Toronto

When inquiring check CP 7843 on handy form, pgs. 2-3

## PACKAGING

### Moisture in packages\* indicated by change in colors

Humidity indicator shows the amount of moisture in dehydrated packages by a change in color. It is intended to be assembled as a part of container itself. Device is equipped with gaskets and metal fittings which permit it to be fastened to a nipple welded to shell of container. In this way a tight seal is provided against possible moisture infiltration around indicator.



Humidity indicator is shown assembled (left) and disassembled

Unit, which has glass bull's-eye and is made of three parts, contains Tel-Tale indicating silica gel. This material changes color from deep blue to light pink as it picks up moisture. Air within container can circulate freely through indicating gel to provide a visual means of determining humidity conditions within package without opening it.

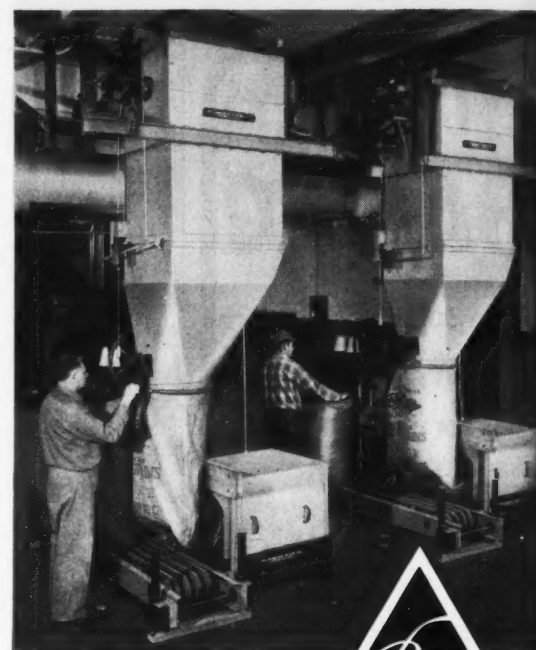
Indicator is already being employed to prevent damage to military supplies from moisture. Although device is presently being used in large containers, it is also suitable for small packages such as those containing individual spark plugs.

("Bull's-eye humidity indicator is product of The Davison Chemical Corp., Dept. CP, 20 Hopkins St., Baltimore 3, Md. . . or for more information check CP 7844 on handy Reader Service slip, pages 2 and 3.)

### Speedy on-the-job gluing facilitated by hand dispenser . . .

metal roller provides clean, uniform application

Uses: For on-the-job gluing operations. Applications include making waterproof case liners, gluing closures on corrugated boxes, and for use of pressure stick adhesives.



## RICHARDSON BAGS FOR



Blatz Brewing Company, brewers of one of Milwaukee's oldest and most famous beers, has a valuable by-product in dried brewers' grains. To make the bagging of these grains as efficient as possible, they called in a Richardson Engineer for recommendations. As a result, Blatz' dried grains are quickly and neatly packaged for resale in minimum size bags of *consistently accurate weight*.

For more than fifty years, Richardson has made a specialty of engineering and building systems for materials handling by weight. Over this period, Richardson has amassed a wealth of practical experience in solving bagging and automatic weighing problems for every branch of the process industries.

With no obligation on your part, a Richardson Engineer will gladly call, make a survey of your present methods, and recommend the route to more profitable operations.

### PROBLEM:

Weighing light, bulky, dried brewers' grains and packing them into minimum-size bags ACCURATE BY WEIGHT.

### SOLUTION:

Installation of two Richardson Automatic Packing Systems each consisting of (1) a Richardson automatic scale, (2) Richardson oscillating packer to shake down the material in the filled bags, and (3) a Richardson V-belt Bag Sewing Conveyor. These two packing systems handle the entire output of Blatz bulky dried brewers' grains. Through the use of automatic bagging and a smaller bag size they effect a substantial saving over slower hand methods which do not use a packer.

**Richardson Scale Co., Clifton, New Jersey.** Feeder-Weigher Systems of All Types: Automatic Bulk-Weighing Hopper Scales, Including Conveyor-Feed Types • Continuous Feeder-Weigher Automatic Bagging Scales • Bag Sewing Conveyors • Packers Process Control Panels. *Branch offices in:* Atlanta • Buffalo Boston • Chicago • Detroit • Houston • Minneapolis • New York • Omaha • Philadelphia • Pittsburgh • San Francisco Wichita • Montreal • Toronto.

**Richardson**

8768

MATERIALS HANDLING BY WEIGHT SINCE 1902

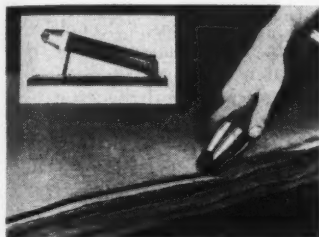
When inquiring check CP 7845 on handy form, pgs. 2-3

CHEMICAL PROCESSING

## PACKAGING

**Features:** Self-lubricating and free turning metal corrugated roller supplies the clean, uniform thickness necessary for liners and packaging. Old fashioned messy and unpleasant means of applying glue is virtually eliminated.

**Description:** Glue dispenser is light and easy to handle. Its weight is only one pound and six ounces. Magazine or handle is 10" long and holds approx 1/6 gallon of light or heavy water-proof glue meeting specifications JAN-P-140 and MIL-140A. This



A uniform, smooth glue line is formed by dispenser

amount will yield about 100 feet of uniform glue line. Gravity feed assures a smooth, even-flowing three-quarter inch glue line.

Dispenser is said to be sturdily constructed so that it stands up well under daily use. It has few parts that wear. Method of lubrication eliminates sticking of roller by dried films of adhesive during long periods on non-use.

(Fibro Hand Glue Dispenser is marketed by Fibleco Illinois Corp., Dept. CP, 311 N. Desplains St., Chicago 6, Ill. . . . or for more information check CP 7846 on handy form, pages 2 and 3.)

See the handy method for determining composition of commercial toluene. Nomographic presentation given in Processing & Engineering Data Section . . . . page 196

For more information on product advertised at right, specify CP 7847 . . . see information request blank between pages 2-3



## Her fingertips imagine the taste

The lady doesn't trust her eyes alone.

The buyer of Multiwalls is in much the same position.

Aside from package design, it's hard to tell one manufacturer's bag from another's simply by looking at it or fingering it.

Put the bags out of sight and you may be able to see many differences.

Men who buy 85 per cent of all Multiwalls consider\* these intangibles more important than any other factor when they choose their supplier.

Invariably, these are among the first questions they ask . . .

"Is this company big enough?"

"Do they have a fair allocation policy?"

"Are their prices competitive?"

"Do they respect delivery dates?"

In a nutshell—

"Are they good people to do business with?"

We can't tell you what the answers are when these Multiwall users consider Union. This we do know . . . and the inference is yours to make—

In these days of industrial pressure, when *dependability* is a fervent wish as well as a word, men to whom Multiwalls are important are placing an increasing share of their orders with Union.

More so every day . . .

**IT'S UNION FOR MULTIWALLS**

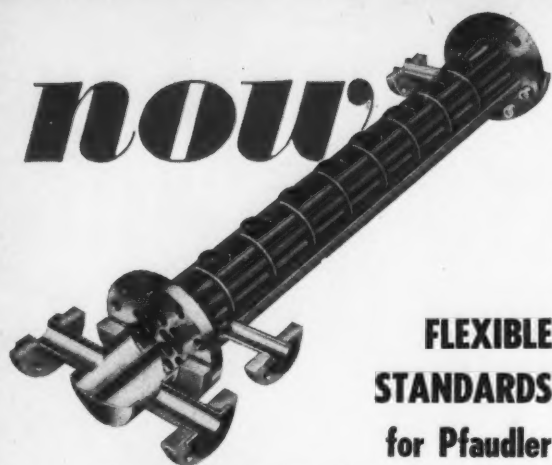


\*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING



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**FLEXIBLE  
STANDARDS  
for Pfaudler**

## Stainless Steel Heat Exchangers

Design features previously associated only with custom-built heat exchangers are now available at competitive standard cost under Pfaudler's new system of flexible standards.

For a given heat transfer area, you may select the most applicable combination of length and diameter. Further, nozzles can be of any size and in any position and can be either threaded or flanged. **RAPID DELIVERY** — With our new production line methods, flexible standard units can be delivered in 4 to 12 weeks after the receipt of your order.

**COMPLETE LINE** — The flexible standard program applies to fixed tube sheet, single or multi-pass, tube and/or shell side stainless steel units in diameters up to 10". In addition, Pfaudler heat exchangers are available with shell diameters from 4" to 24" in four basic types of construction . . . fixed tube sheet condenser, outside packed floating head design with removable tube bundle and shell, "U" tube construction with removable bundle.



**GET THIS PFAUDLER DATA BOOK** — This 40-page fact-packed heat exchanger manual contains all the data you need to work out capacity and type problems. Easy-to-follow tables, curves and charts. Full details on Pfaudler heat exchangers. Mail the coupon for your copy.

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**ENGINEERS AND FABRICATORS OF CORROSION RESISTANT  
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Carbon Steel • Solid or Clad Stainless Steel • Nickel • Inconel •  
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No. 837

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Company \_\_\_\_\_

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When inquiring check CP 7848 on handy form, pgs. 2-3



## Recent Books



### ENCYCLOPEDIA of SURFACE-ACTIVE AGENTS

Reviewed by C. H. Egan, V. P.-Research  
Dewey and Almy Chemical Co.  
Cambridge, Mass.

Professor Sisley's book, *Encyclopedia of Surface-Active Agents*, ably translated from the French by P. J. Wood, is a fine up-to-date treatment of this subject. Where it may appear to emphasize the use of these agents in the textile art, it must be remembered that the original uses of these materials were in that field.

This amazingly compact but very complete coverage of the names, classifications, compositions, methods of manufacturing and uses of surface-active agents makes this a very valuable and necessary book for the present and potential users of these agents. Among the chemicals covered are wetting agents, detergents, penetrants, foaming compounds, emulsifiers, and dispersing agents.

Of the two parts into which the book is divided, the first treats surface-active agents generally. Enumerated here are properties, applications, and methods of manufacture. The second part compiles data on commercially available products which appeared on the world market up to the time of publication. They are arranged alphabetically according to brand name. Information given includes: manufacturer, chemical composition, class, appearance, properties, reaction, patents, applications, and quantities used in various applications.

To obtain "Encyclopedia of Surface-Active Agents" remit \$15 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N. Y. When inquiring specify CP 7849 on handy form, pages 2 and 3.

### CHEMICALS of COMMERCE

Reviewed by Dr. Leonard Nicholl  
Kay-Fries Chemicals, Inc.

Present volume, containing 520-pages, is a second edition of the book which first appeared in 1939 and was reprinted in 1942. Written by Foster Dee Snell and Cornelia T. Snell, publication contains short paragraph descriptions of a wide variety of inorganic and organic materials, both natural and synthetic. It is written particularly for the "practical" person; however, it should also be valuable as a reference for the "theoretical" person for those materials which lie outside a field of specialization.

Chapter titles are as in the first edition except for minor changes in several of the later chapters. A chapter on "Vitamins, Sterols, Antibiotics and Hormones" has been added as well as appendices giving: The Federal Insecticide, Fungicide and Rodenticide Act; lower explosive limits of combustible vapors and dusts; maximum permissible

vapor concentrations of chemical compounds, and an official table of tars.

The index has been eliminated from this edition. This is unfortunate, since the compounds are not always listed alphabetically within the various chapters. However, since related compounds are placed together, this inconvenience is minimized.

Largest number of additions have been made in the chapter covering compounds which have become recent members of the roster of commercial chemicals. Thus, chapters covering hydrocarbons, alcohols, phenols, aldehydes, ketones, acids, amines, esters, ethers, organic dyes (several new tables), synthetic gums and elastomers, and proteins reveal the greatest expansion.

A check of a chapter on "Vitamins, Sterols, Antibiotics and Hormones" indicates that a wide variety of such products are briefly noted, but that there is a curious omission of cortisone and related compounds.

A sufficient number of additions have been made to keep the book abreast of the recent commercial development of a large number of compounds.

To obtain "Chemicals of Commerce" remit \$6.50 direct to D. Van Nostrand Co., Inc., Dept. CP, 250 Fourth Ave., New York 3, N. Y. When inquiring specify CP 7850 on handy form, pages 2 and 3.

### ENCYCLOPEDIA of CHEMICAL TECHNOLOGY VOL 9

Reviewed by W. J. Banke

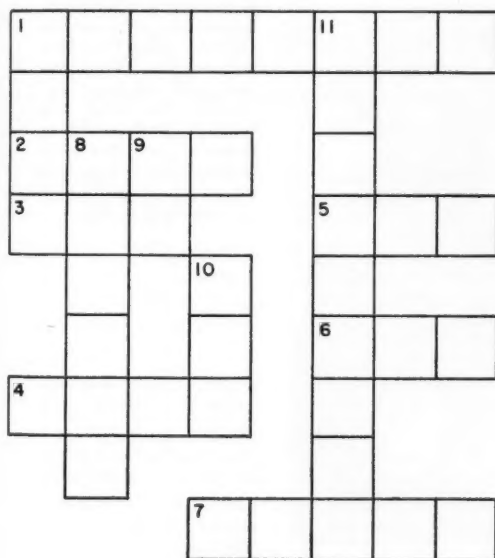
"Metal Surface Treatment" to "Penicillin" is the alphabetical scope of Vol 9 of this comprehensive tome on chemical technology being edited by Raymond E. Kirk and Donald F. Othmer of the Polytechnic Institute of Brooklyn. As with its predecessors, its appearance date was faithful to the notation on the flap which reads, "Further volumes to appear at 7-month intervals."

Within its 943 pages, approximately 68 topics are covered under 15 alphabetical headings. By far the largest amount of space — about 170 pages — is devoted to nitrogen and nitrogen containing compounds. In this major group of subjects may be found: nitration, nitrides, nitro alcohols, nitro and nitroso compounds, nitrobenzene and nitrotoluenes, nitroparaffins, and nitrosyl compounds.

Under the topic Nucleonics, exception must be taken to statements concerning methods for disposing of radioactive waste materials. Units in operation at AEC sites indicate that concentration by evaporation, ion exchange, etc are not "expensive and troublesome" but, on the contrary, feasible and practical methods. Additionally, burial of radioactive wastes at sea cannot be considered "an important and satisfactory method of disposal." be-

Test your knowledge of the items covered in Vol 9 by means of the following puzzle:\*

1. "Pyroligneous ether"
2. \_\_\_\_\_ graphs or alignment charts
3. The \_\_\_\_\_ reaction involves addition of carbon monoxide and hydrogen to an olefin in the presence of a cobalt catalyst to produce an aldehyde containing one C-atom more than the starting compound
4. An accumulation of partly decomposed plant material
5. Ribonucleic acid
6. Desoxyribonucleic acid
7. Food-producing microorganisms of the sea



1. Prefix indicating presence of one atom or group in a compound
8. Compounds possessing =N—OH group
9. Atomic number 42, atomic weight 95.95
10. A hard-shelled seed enclosing a single edible oily kernel
11. Process for impregnating steel with nitrogen

\*See page 214 for solution

**1** — **FRAME** — Rigid cast iron. Designed to hold bearing alignment, resist corrosion, prevent distortion under any normal operating condition.

**2** — **ROTOR** — Die cast aluminum for maximum strength. Practically indestructible in service.

**3** — **CONDUIT BOX** — Provides plenty of room to connect leads. Adjustable to any position. Long leads make connection easy.

**4** — **STATOR** — Multiple-dipped, baked after every dip. Builds up tough protection against heat, moisture, corrosion.

**5** — **BEARINGS** — Double shielded with provision for in-service lubrication if desired. Will run for long periods without attention but can be greased if conditions demand it. Thoroughly protected against outside dirt.

**6** — **VENTILATION** — Drip-proof with plenty of internal air circulation to prevent hot spots.

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**PUMPS** — Integral types from 3/4 in. to 72 in. discharge and up.

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Now there is a real solution to the problem of screening solids out of manufacturing waste water *before* it reaches the main sewage disposal outlets. SWECO Separators will screen from 90% to 100% of all solids from waste liquids on a production basis through screens from 50 up to 325 mesh. SWECO Separators are doing a job in the following and many other industries:

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**SEPARATOR DIVISION**  
SOUTHWESTERN ENGINEERING COMPANY  
4800 Santa Fe Avenue, Los Angeles 58, Calif.

S-9

When inquiring check CP 7853 on handy form, pgs. 2-3

for the  
laboratory

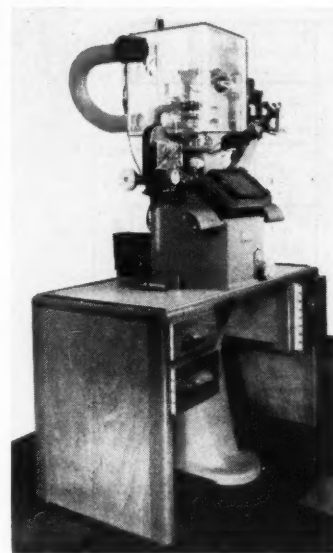
## Plenary microscope offers range of accessories plus convenience

controls are accessible from op-  
erator's position; unit incorporates  
an incubated stage

**USES:** Instrument can be used for either time-lapse or normal cinemicrography, or for examination or photography by the still camera facilities. Basic projection microscope unit can be used for examination and photography of the following: 1) opaque objects under powers ranging from 33 to 4740x, with normal incident illumination from clear glass or metallic reflectors, and with dark field illumination from 90 to 1850x; 2) translucent objects at powers from 33 to 4740x with transmitted light; 3) macro or low power examination or photography of opaque or translucent specimens at magnifications of 3.5 to 33x, the opaque specimens by normal incident or oblique illumination and the translucent specimens by transmitted light. Polarized light may be used throughout the ranges under (1) and (2) above.

**Features:** Since all controls are readily accessible from a seated position in front of instrument and changeover from one set of conditions to another is extremely rapid, instrument is suitable for almost all needs in field of photomicrography. Accessories available for use with instrument include: 1) incubator surrounding the stage and substage; 2) motion picture camera and controls for time-lapse photography; 3) phase contrast equipment for both transmitted and reflected light; 4) micro-hardness testing equipment; and 5) Cooke achromatic objectives for crystallographic work.

**Description:** The Lovins Plenary Microscope is a general purpose photomicrographic unit offering versatile facilities, and using as its base the Vickers Projection Microscope. The unit is designed to permit cinemicrography (delayed or normal, choice of 16 or 35 mm camera), visual



General photomicro-  
graphic unit illustrates in-  
tegrated design of instru-  
ment. Photo shows instru-  
ment with incubator sur-  
rounding the stage and  
substage area, permitting  
operation at controlled  
temperatures. All controls  
are readily accessible from  
operator's position

examination (eyepiece or ground glass), photomicrography or photomacrography up to 5 x 7 in film or plate, and external screen projection for observation by small groups.

Any two of five lamps can be mounted simultaneously on the lamp arm, and quick changeover from one lamp to the other is readily accomplished by movement of a hand lever. Offered are a 100-w zirconium arc lamp for AC only, a Pointolite tungsten arc lamp for AC or DC, a carbon arc for AC or DC, a mercury arc for AC or DC, and a ribbon filament lamp suitable for AC or DC.

Instrument is available either with or without an incubator surrounding the stage and substage. The incubator offers full access to stage area and does not inhibit action of the stage for its normal operations of translation, rotation or vertical movement. Temperature is controlled by a very

sensitive mercury-in-glass thermoregulator, controlling a heater in the blower air stream through a sensitive relay. Maximum temperature variation, according to manufacturer, is plus or minus  $\frac{1}{2}^{\circ}\text{F}$ . Changes of this magnitude take place only over an interval of several hours.

To facilitate operations, instrument incorporates a beam-splitter and mirror which enable observer to see at all times in the eye tube a portion of the light passing either to projection system for still plate photography or to motion picture camera. Changeover from still to motion picture photography is accomplished by operating a push-button inside the door on left side of instrument. In case of the 16 mm camera, image is formed directly by the objective, and magnifications range from approximately 7 to 200x.

(Instrument is a product of Lovins Engineering Co., Dept. CP, 8203 Cedar St., Silver Spring, Md. . . . or for more information check CP 7854 on handy form, pages 2 and 3.)

### Record of time vs position — this camera does it with mirrors

**Controls and interlocks guard  
against any errors, and protect  
safety of equipment and operator**

**USES:** Unit is designed for study of self-luminous transient events such as explosive, flash tube; and spark-discharge phenomena.

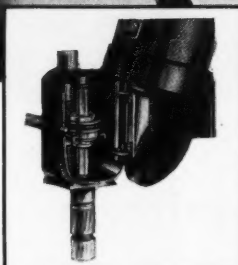
**Features:** Normal photographs of test object can be taken in such a way that an image of the slit can be superimposed as a reference to show section of object which will be photographed during test.

**Description:** The Beckman & Whitley Research Camera, Model 168, belongs to classification of "smear" or "streak" cameras and is based on action of a mirror which rotates at a speed of 50,000 rpm, wiping an image onto film at a sweep rate of 5.466 mm per microsecond.

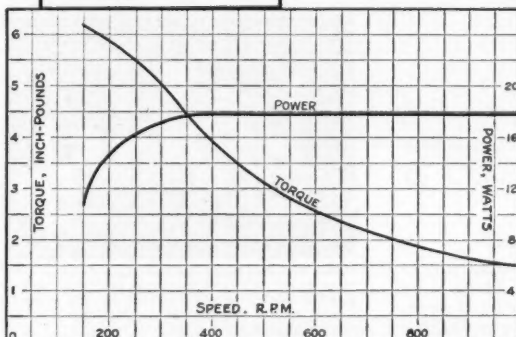
An internal lens forms an inverted non-magnified image of the slit in film plane after reflection from the mirror surface whose reflection sweeps the image across film surface at a selected sweep rate. Any sweep rate may be chosen between 0.327 and 5.466 mm per microsecond. Sequence of events at test object which takes place in vertical area imaged in slit is separated in time as it is spread across the film.

Due to high speed of operation, mirror must be rotated in a vacuum and the camera housing is so designed — being equipped with a mechanical vacuum pump located in the stand. The mirror, of high-quality stainless steel, has a working surface optically flat to one circular fringe and is rotatable at continuously-adjustable speeds ranging from 3000 to 50,000 rpm.

(Continued on next page)



Left—Drive shaft parallel with face of cone insures high torque and constant speeds under varying load conditions. Speed is easily adjusted by merely turning the knurled knob at the top.



No. 18802 Cenco High Torque Motor Stirrer, 115 volts, 60 cycle AC. . . . . \$71.82  
No. 18802H, same as above but with universal motor. . . . . \$87.21

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... one dependable source of supply for everything you need in scientific instruments and laboratory supplies. Over 15,000 items ... 14 branch offices and warehouses.



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# 8 Reasons Why Cenco High Torque STIRRERS DO A BETTER JOB—

This unit is designed to handle a simple or critical stirring job with maximum efficiency. It's engineered and built for absolute dependability under the most exacting requirements. Light liquids or viscous . . . high or low speed . . . constant or varying consistency . . . whatever the job, it will do it the way you want it done . . . perfectly.

Here are a few of the reasons why:

- High torque at all speeds.
- Precise control of speed from 100 to 1300 rpm without reducing stirring effectiveness.
- Adequate power for stirring extremely viscous liquids.
- Fully enclosed cone drive protected from fumes, oil spattering, etc.
- Stainless steel parts resist corrosion.
- No variation of stirring speed though consistency of liquid may change greatly.
- Improved double-grip chuck provides tight clamping and perfect alignment of stirring rod.
- Finger-tip speed adjustment with indicator showing speed setting.

Cenco High Torque Stirrers are preferred by laboratory technicians all over the country. Order yours today. We'll make prompt shipment.

When inquiring check CP 7855 on handy form, pgs. 2-3





Spheres "Bed" Perfectly in catalytic processing. In Norton Spherical Catalyst Supports you get uniform beds that promote uniform flow of

gases and assure minimum pressure drop. Spheres are available in sizes 3/16" to 1". Supports in Ring and Pellet form in sizes 1/4" to 2".

## Catalyst supports to your special prescription

*... Norton engineered for your special requirements*

Where catalyst supports were applicable Norton engineers have been successful in meeting the requirements of a large variety of conditions.

Over 40 years' experience in research and developments of special refractory materials and mixtures have enabled Norton to tailor special refractory mixtures to meet the requirements of the chemical industry.

ALUNDUM® Catalyst Supports are a good example. They have such qualities as great refractoriness, chemical inertness, strength and high resistance to abrasive action. They are made by Norton's exclusive "controlled structure" process. It provides

medium porosity of 30-35% with rough open structure for maximum adherence of catalyst, or high porosity 42-47% with large connected internal pores, uniformly dispersed for maximum deposition of the catalyst.

### Test them yourself

See what Norton ALUNDUM Catalyst supports can do for you. If you would like to see samples, see your Norton refractories representative or write Norton Company, 561 New Bond Street, Worcester 6, Mass. Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.

\*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

**NORTON**

**Special REFRACTORIES**

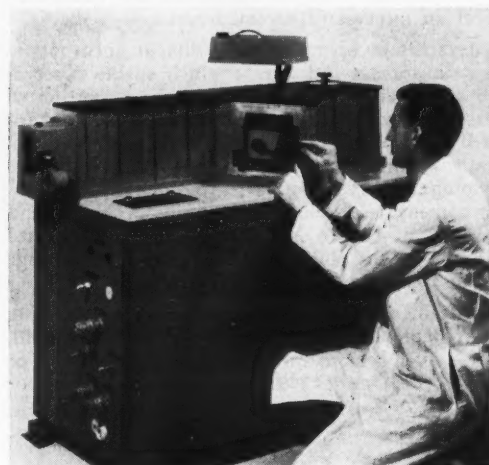
*Making better products to make other products better*

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

When inquiring check CP 7856 on handy form, pgs. 2-3

## FOR THE LABORATORY

(Continued from preceding page)



Research camera is used to study position vs time relationship. Event to be studied is oriented before vertical slit visible at upper left and photographic record is obtained on 4 x 5" film located in film holder between operator's hands. High-speed rotating mirror is located inside upper right section of housing below vertically-projecting knob which can be seen in photo. Knob secures a vacuum-tight round access panel through which mirror is rotated preliminary to photographic run

The shutter is a high-speed guillotine type designed to prevent multiple exposure when phenomena of long duration are being observed. Operable by external electrical impulse, shutter can also be used to actuate related equipment. Exposure time is 1/200 sec.

(Instrument is product of Beckman & Whitley, Inc., Department CP, San Carlos, California . . . or reader may secure more information about this product by simply checking CP 7857 on handy Reader Service slip between pages 2 and 3.)

### Chambers give four-way control of testing conditions . . .

automatically keep humidity from 20 to 95% thru 35-185°F range

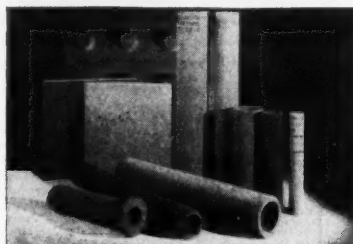
**Uses:** Used for conducting temperature-humidity tests. Applications include: 1) simulation of constant or varying climatic conditions for testing electronic components, instruments, and similar units; 2) checking compliance with government specifications of manufactured parts for government use; 3) moisture testing for protection of delicate mechanical parts — ensuring moisture-tight seals and packaging; and 4) testing for corrosion in various atmospheres.

**Features:** Standardization of line permits selection of chambers from existing specifications which allow wide choice of temperature and humidity ranges.

**Description:** Tenney TH series test chambers automatically maintain humidity from 20 to 95%



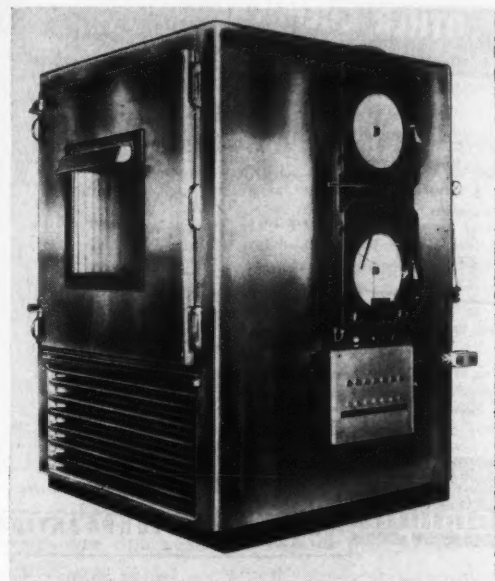
Norton Exclusive Fused Stabilized Zirconia, an amazing material able to take temperatures double the melting point of most metals. No other refractory is so chemically stable at such high temperatures. (Up to 4700°F.) Ask for Bulletin 793.



Norton Exclusive. Norton ALUNDUM Seamless Tubes for filtration, aeration, diffusion maintain constant air or liquid pressure. ALUNDUM porous mediums also available in plates, discs and diaphragms. Ask for Bulletin No. 140.

through a temperature range of 35 to 185°F. Minimum dew point is 33°F.

Chambers come with the following inside dimensions: 1) 22 x 19 x 48", 2) 42 x 18 x 48", 3) 36 x 31 x 36", 4) 42 x 24 x 48", and 5) 48 x 24 x 48". Common to all models are calibrated in-



Five basic chamber types allow choice of wide range of humidity and temperature conditions

dicating thermostatic controllers, air circulating blowers for uniform movement of air, and stainless steel interior and exterior paneling.

Four types of control are incorporated in chambers: constant humidity, constant temperature; constant humidity, varying temperature; varying humidity, constant temperature; and varying humidity, varying temperature.

(Chambers are products of Tenney Engineering, Inc., Department CP, 26 Avenue B, Newark 5, New Jersey . . . or reader may secure more information about this development by simply checking CP 7858 on handy Reader Service slip between pages 2 and 3.)

#### Lists comprehensive line of electronic equipment

Illustrated catalog contains listings for thousands of items of electronic equipment for industry and laboratories. Among categories of equipment which are described in individual sections are test equipment, industrial equipment and supplies, high fidelity systems and components, Public Address and intercom systems, and a number of types of parts.

Cat 55 is issued by Newark Electric Co., Dept. CP, 223 W. Madison St., Chicago 6, Ill. When inquiring specify CP 7859 on handy form, pages 2 and 3.

# now . . immediate delivery!

## LINDBERG G-10 BOX FURNACES



Maximum heating temperature . . 3000° F.

Continuous Operation . . 2500° F.

Expanded plant capacity now enables us to put the "immediate delivery" tag on the popular Lindberg G-10 Laboratory Box Furnace.

Now is the time to order *your* Lindberg G-10 . . it's just the thing for today's complete and ultra-modern laboratory! Check these features of the G-10 . . features that make it a versatile, rugged and dependable unit.

**Precision heating** . . The model G-10 reaches and holds selected temperatures within plus or minus 1° F. at higher temperatures. Control is by a Lindberg "Lab-type" indicating controller pyrometer . . it's entirely automatic . . operates electronically.

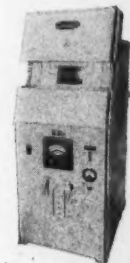
**Fast heating** . . The 3000° F. top heating capacity provides any lower operating temperature desired (300° F. minimum), quickly and positively.

**Uniform heating** . . Heat is evenly distributed by 10 silicon carbide Globar heating elements . . equally spaced at top and bottom of the work chamber.

**Compact, Self-contained** . . The Lindberg G-10 is a "package" unit . . all you have to do is hook it up. All controls and equipment are in the furnace housing. Work chamber dimensions are 6" wide x 12" deep x 4 3/4" high. And overall measurements are only 27" from front to back . . 24" wide . . and 56" high.

The G-10 can also be used as a muffle furnace, or with carbon blocks for nonoxidizing atmospheres.

The Lindberg G-10 is a natural for your laboratory! For detailed information call your laboratory equipment dealer, or write Lindberg Engineering Co., 2450 West Hubbard St., Chicago 12, Illinois. Ask for bulletin No. 1000.



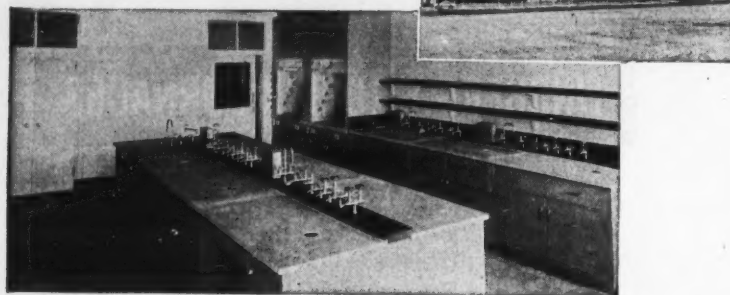
## LINDBERG LABORATORY EQUIPMENT

Lindberg Engineering Company, 2480 West Hubbard Street, Chicago 12, Illinois

When inquiring check CP 7860 on handy form, pgs. 2-3



## In Well-Equipped, Modern Labs it's **ALBERENE** table tops, sinks and hoods



Esso Research Center of the Standard Oil Development Company at Linden, N. J. Over 12,000 square feet of Alberene Stone are used in the new lab's table tops and sinks.

You'll find many of the newest and finest laboratories in the country are equipped with table tops and sinks of Alberene Stone. Because Alberene Stone is a natural material that is highly corrosion-resistant . . . durable . . . and attractive. And . . . because Alberene Stone is easy to handle—easy to drill and cut.

Alberene offers you expert engineering assistance based on more than fifty years experience in equipping laboratories. For information and technical advice, just write Alberene Stone Corporation of Virginia, 419 Fourth Avenue, New York 16, N. Y. Or better yet—why not visit our nearest branch office?

### **ALBERENE STONE**

When inquiring check CP 7861 on handy form, pgs. 2-3

## **STROBOTAC**<sup>®</sup> for "Slow Motion" Study of ROTATING · VIBRATING and RECIPROCATING MECHANISMS

Leading manufacturers have applied the Strobotac to the solution of hundreds of mechanical problems.

★ Motor speeds are accurately measured under any load conditions—operating conditions are not altered

★ Commutator chattering, brush eccentricity and frame vibrations are easily detected

★ Fan operation is studied with aid of chemical smoke in air currents around blades

★ Recurring imperfections in steel being rolled at 70 mph are readily detected—slip between top and bottom rolls is observed

The Strobotac has been used to great advantage in design, production, testing, and sales demonstrations . . . its uses are extremely diverse.

Type 631-B Strobotac  
600 to 100,000 rpm \$140

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has additional 60 to 1440 rpm range \$170

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90 West St. NEW YORK 6 920 South Michigan Ave. CHICAGO 5  
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When inquiring check CP 7862 on handy form, pgs. 2-3

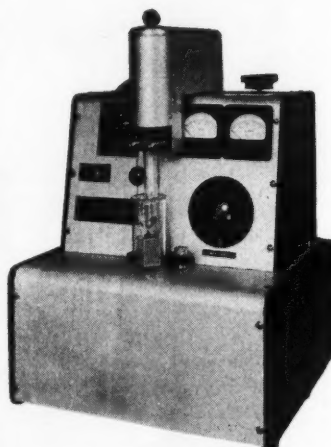
## LABORATORY

### Single-position unit for rapid analysis of metals, alloys . . .

claim deposition of copper in fraction of normal time

Uses: Recommended particularly for determination of copper and for the simultaneous determination of copper and lead in analysis of alloys having a high percentage of copper. Also suitable for determination of nickel, antimony, cadmium, zinc, chromium, and other metals.

Features: Single-position unit, according to manufacturer, has uninterrupted production rate which is substantially equivalent to 4 positions on a conventional electroanalysis apparatus.



Single-position unit for metal analysis by electrodeposition incorporates many features which allow increased speed of plating

Description: Improved cell design, in combination with an electromagnetic field and greater current flow, allow the Ultra-speed electroanalyzer to offer increased speed of plating. Of these three factors, the increased current flow within the cell is primarily, but not solely, responsible for increased speed of determinations. Increased current flow does increase actual plating speed by itself, but in addition, increased current in conjunction with the electrical circuit produces a dynamic stirring action which also helps the speed of plating.

Specially designed cell requires 50 ml of concentrated electrolyte

## DO YOU HAVE THE FACTS ON CATALYTIC FUME DISPOSAL FOR KETTLE COOKING and OTHER CHEMICAL PROCESSES?

### IT DOES ALL—

- |                                  |   |
|----------------------------------|---|
| 1. Consumes odors                | 5. Improves community good will                       |
| 2. Removes color                 | 6. Meets insurance and air pollution control approval |
| 3. Avoids condensable wastes     | 7. Costs no more                                      |
| 4. Requires no sewage connection |   |

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- ☐ Detailed reports by satisfied customers.
- ☐ Recommendations on a specific problem. (Based on data you include with this request)
- ☐ Facts on Catalytic Combustion and its uses.



Fume Incineration for Industry

**COMBUSTION CORPORATION**

4544 GRAND RIVER AVENUE

DETROIT 8, MICHIGAN

When inquiring check CP 7863 on handy form, pgs. 2-3

### Preventive maintenance with Ucilon<sup>®</sup> Coatings



## Gives Corrosion No Chance to Start

With today's shortage of metals, many companies are putting greater emphasis on preventive maintenance than ever before. They have found that using chemical resisting Ucilon Protective Coatings on a regular basis avoids corrosion damage to equipment, minimizes not only the need for replacement but also the costly downtime.

Ucilon Coatings are based on highly chemical resistant materials. They include vinyl, chlorinated rubber, phenolic or fish oil formulations. Systems of various Ucilon Coatings have been devised for: (1) The formation of a protective film which is an effective barrier to particular corrosives. (2) Maintenance of adhesion and resistance to undercutting in the event of damage.

Get the concise facts—write for 4-page bulletin.

\*Trade Mark



## UCILON Protective Coatings

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One Group of the Many **UNICHROME** COATINGS FOR METALS

UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N. Y.  
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In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 7864 on handy form, pgs. 2-3

# STOPWATCH FACTS

**ONLY Minerva CAN OFFER**

- **NEW UNCONDITIONALLY GUARANTEED COIL-SPRING!**  
There is no wear . . . no friction . . . no failure with the non-breakable Minerva coil-spring, because Minerva places coil-springs at critical wearing points for shock-proof, uninterrupted service! A new accuracy standard guaranteed for life.
- **INDEPENDENT HAMMER SPRING** gives perfect flyback to zero on every "Button on Side" time out feature — guaranteed for life!
- "Noiseless" snap-back time out feature on all "Side Slide" models

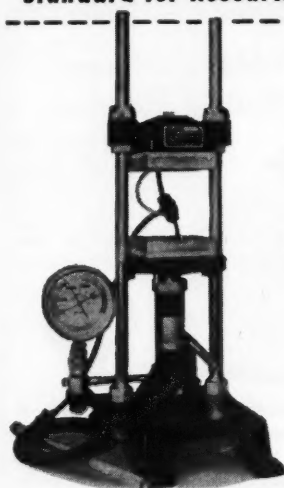
**IN FACT** no other stopwatch offers MINERVA design advantages for lifetime accuracy and sturdiness under rugged industrial conditions. Ideal for Time and Motion Study, Precision Process Timing.

Accuracy certified by our Western Electric Electronic Timer  
Write today for complete catalog

**M. DUCOMMUN Company**  
Specialists in Timing Instruments  
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When inquiring check CP 7865 on handy form, pgs. 2-3

## Standard for Research and Development



... wherever Pressing is required.

the  
**CARVER  
LABORATORY  
PRESS**



Accurately controlled pressures to 20,000 lbs.; 6-inch gauge mounted on base. Carver Standard Accessories include Electric or Steam Hot Plates, Carver Test Cylinders, Swivel Bearing Plates, Cage Equipment. Available from stock. Write for catalog.

**FRED S. CARVER INC.  
HYDRAULIC EQUIPMENT**

52 RIVER ROAD, SUMMIT, N. J.

When inquiring check CP 7866 on handy form, pgs. 2-3

## LABORATORY

which in itself tends to plate rapidly, but, in addition, center pillar in cell places most of electrolyte directly between electrodes where electrolytic action is most effective.

A stirring action, incorporating no moving parts; cell closure condenser which eliminates loss of sample by mechanical action of bubbling; convenient electrode holder and heavy duty platinum electrodes are other convenient components of this particular equipment.

By means of a built-in selenium dry-disc type full-wave rectifier, unit delivers up to 10 v, 25 amp DC at electrodes for a single determination. Self-contained apparatus operates from line current; requires no auxiliary equipment such as motor generators, rheostats, rectifiers, transformers, batteries. Connected directly to a convenient outlet, the unit draws 4 amp at 115 v, 50-60 cycle, single phase. Unit requires 400 w.

(Unit is a product of Eberbach Corporation, Department CP, Ann Arbor, Michigan . . . or for more information about this product check CP 7867 on convenient Reader Service slip between pages two and three.)

## Teflon plug eliminates two buret problems . . .

**Uses:** Can be employed where requirements indicate automatic buret would offer advantages. However, specific models are available for use with either acids or alkalis.

**Features:** Teflon plug eliminates sticking or binding action such as occurs with conventional plugs, especially in presence of alkali. In addition, Teflon-coated joint prevents buret from freezing to reservoir.

**Description:** Teflomatic Burets, a recently developed line of automatic burets, are available in two models — Model TJ-715 for use with acids and Models TJ-740 for use with alkalis.

Both models are similar to standard automatic burets, but each model has a solid Teflon plug which prevents sticking or binding. Moreover, Teflon-coated joint connecting buret with reservoir prevents buret from freezing to bottle. Teflon provides a firm, secure seal

(Continued on next page)

# KIRK AND BLUM INDUSTRIAL OVENS

## Ready To Go!

Typical Kirk & Blum Oven Control



Many KIRK & BLUM Industrial Ovens, although designed and built to specifications, are shipped completely assembled and tested, ready to operate. Once "spotted" in your plant, they can be connected and in operation in a few hours, saving time and expense.

Illustrated above is a representative group recently shipped to well known industrial firms. From left to right: two moisture evaporation ovens for chemical powders; moisture removal oven for carbon electrodes; a conveyerized oven for drying insulating varnishes.

These units are shown in the assembly bay of the Industrial Oven department in the new KIRK & BLUM plant . . . 120,000 square feet of new production facilities designed to serve you better.

## INDUSTRIAL OVENS

For information or literature on any of these KIRK & BLUM products write

# KIRK AND BLUM

THE KIRK & BLUM MFG. CO.  
3133 Forrer Street  
Cincinnati 9, Ohio

When inquiring check CP 7868 on handy form, pgs. 2-3



## YOUNG BROTHERS OVENS and DRYERS

for accurately  
controlled  
temperatures

in

BAKING

DRYING

CURING

DEHYDRATING

OF  
**Chemicals and  
Pharmaceuticals**

Electrically heated,  
multiple shelf-type dryer.

Young Brothers Ovens and Dryers are  
engineered and built to secure uniform  
results through their accurately controlled  
temperatures and positive air circulation.

Among leading concerns using Young  
Brothers Ovens are Reichhold Chemicals,  
Inc., Parke, Davis & Co., Glidden Co.,

Upjohn Co., Atomic Energy Commission, E.  
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Standard and Special Designs, Batch and  
Conveyor Types.

Write for Bulletin 17.



**YOUNG BROTHERS COMPANY**

1825 Columbus Road

Cleveland 13, Ohio

When inquiring check CP 7869 on handy form, pgs. 2-3

## THE "DAVENPORT" CONTINUOUS PRESS

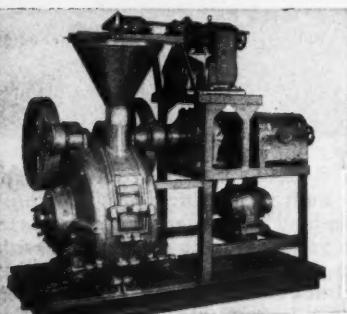
### DAVENPORT

De-Watering  
Presses and  
Screens

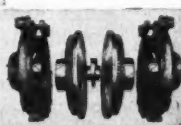
### ROTARY

Steam Tube  
Hot Air and  
Direct Fire  
Dryers.

Water Tube  
and Air  
Coolers



Assembled Press.



Revolving Discs.



Cross Section.

The Davenport Continuous Presses are  
made in three sizes. Davenport Presses  
are the most efficient mechanical  
method of extracting excessive moisture  
from semi-solids. If you have a  
moisture problem, let Davenport engineers  
assist you. Write for our  
complete catalog.

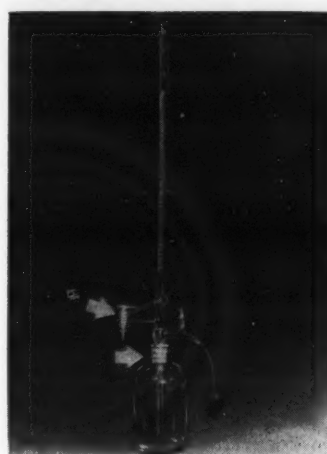
For quick reference see "Sweet's 1952  
Processing Industries" file or "Chemical  
Engineering Catalog" — 1953.

**DAVENPORT MACHINE**  
and FOUNDRY COMPANY  
DAVENPORT 4 IOWA

When inquiring check CP 7870 on handy form, pgs. 2-3

## LABORATORY

(Continued from preceding page)



Automatic buret for use with  
acids is illustrated in photo. Ar-  
rows indicate solid Teflon plug  
(at top) and Teflon-coated joint  
(at bottom)

which is broken by a slight twist-  
ing of the parts.

(Burets are products of Scientific  
Glass Apparatus Co., Inc., Dept.  
CP, 100 Lakewood Terrace, Bloom-  
field, N. J. . . . or for more infor-  
mation check CP 7871 on handy  
form, pages 2 and 3.)

### Outlines specifications of precision timers

Illustrated 8-page catalog gives  
specifications and information  
regarding many types of chrono-  
graphs and precision timers.  
Booklet also outlines method  
of testing timers, and features  
of the various types of timers.

Catalog of precision timers is  
issued by Clebar Watch Agency,  
Dept. CP, 521 Fifth Ave., New  
York 17, N.Y. When inquir-  
ing specify CP 7872 on handy  
form, pages 2 and 3.

### Graduated cylinders are fabricated of polyethylene . . .

available in 400 and 1000 ml  
capacities

Uses: Laboratory and indus-  
trial where corrosive liquids are  
handled or where unbreakable  
units are needed.

Features: Units are resistant  
to most corrosive liquids, includ-

## accuracy at High Operating Speed with Despatch LABORATORY OVENS



Despatch Laboratory and  
Production Ovens are ideally  
suited to all types of re-  
search . . . testing . . . pro-  
duction control. They are  
designed to provide the  
closest heat uniformity  
through every inch of the  
work chamber . . . con-  
sistently accurate tempera-  
ture control at all heats . . .  
ample speed to process ca-  
pacity loads at any desired  
operating temperature.

Chemical and analytical,  
drying and baking, preheat-  
ing and aging, sterilizing  
and curing, food dehydrat-  
ing — these are just a few  
of the uses. Available in  
six models, with inside di-  
mensions ranging from 13"x  
13"x13" to 37"x25"x50".

- Positive Air Intake
- Guaranteed Heat Elements  
2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design —  
Rounded Corners

**DESPATCH**  
Established 1902

Manufacturers of Ovens  
For All Purposes

ASK FOR BULLETIN No. 106

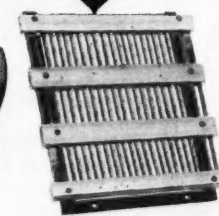
343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 7873 on handy form, pgs. 2-3

## For a Thousand and One Products



### "Folded-and-Formed" Heating Elements



In Standard or  
Custombuilt Racks,  
are demonstrating  
their unequalled  
efficiency and  
economy, every  
day, in a wider  
variety of prod-  
ucts. . . .



EVERYTHING from Hamburger Grills to  
Television Tube Annealers . . . Ovens,  
Dryers, Kettles, Calibrating Tanks, Hot  
Air Ducts . . . the list is long and grow-  
ing longer. What is YOUR heating  
problem? Write for "Folded-and-  
Formed" facts and figures.

**TRENT INC**  
Electrically Heated Industrial Equipment  
235 LEVERINGTON AVE. PHILA 27 PA.

When inquiring check CP 7874 on handy form, pgs. 2-3

CHEMICAL PROCESSING

## HAUCK Micro-Control VALVES

UNIFORMLY GRADUATED  
REGULATION AND ACCURATE  
DUPLICATION OF SETTINGS

**for Real Control**

PRODUCE STRAIGHT LINE  
DISCHARGE DIRECTLY PROPORTIONAL  
TO THE DIAL NUMBER

Stop "guesstimating." With Hauck Micro Control Valves you get visible, positive, speedy, accurate control from full opening to full shut-off. Discharge is directly proportional to setting on calibrated dial. Self-cleaning feature eliminates clogging. Can be operated manually or in automatic control system.

Thousands in use with oil burners, and in pipe lines and processing equipment for vegetable oils, syrups, water, chemicals, etc. Available in steel and corrosion-resistant construction. Made in 1/4" to 1" pipe size.

Write for Catalog

## HAUCK MANUFACTURING CO.

Industrial Oil and Gas Burners and Equipment  
132-142 Tenth Street • Brooklyn 15, New York

When inquiring check CP 7875 on handy form, pgs. 2-3

**NOW** you  
can have  
METERED  
IDENTIFICATION  
for

formula,  
inventory  
and cost  
controls



**STAINLESS STEEL  
METER**  
Inside and Out

### STOPS CORROSION PROBLEMS HANDLING FOODS, PHARMACEUTICALS, CHEMICALS, OTHER LIQUIDS

This new Rockwell Type 2BC Rotocycle meter is of all-stainless steel construction; corrosion-resistant, easy to clean. It provides accurate records of quantities of liquids handled which are so important in quality control, scheduling, cost accounting and tax analyses. Quantity Control Registers and Remote Registration Systems are available. Described in Bulletin OG-403. Write Rockwell Mfg. Co., Dept. A-1, Pittsburgh 8, Pa.



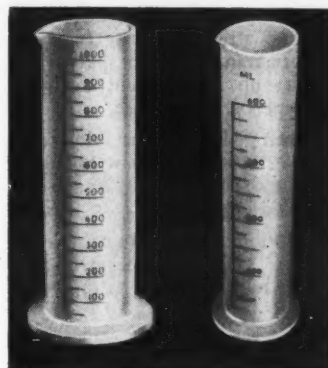
**You Can RELY ON ROCKWELL INDUSTRIAL  
METERS**

When inquiring check CP 7876 on handy form, pgs. 2-3

## LABORATORY

ing hydrofluoric, sulfuric, hydrochloric, and nitric acids at temperatures up to 170°F.

Description: Agilene graduated cylinders are fabricated throughout of polyethylene. Ex-



Polyethylene graduated cylinders  
for the laboratory available in  
400 and 1000 ml capacities

tremely light in weight and unbreakable, the units are available in 400 and 1000 ml capacities with subdivisions of 25 and 50 ml respectively.

(Cylinders are products of American Agile Corp., Dept. CP, PO Box 168, Bedford, Ohio . . . or for more information check CP 7877 on handy form, pages 2 and 3.)

### Presents information on laboratory baths

Descriptive 8-page booklet deals with components of constant temperature baths which allow any chemist, bacteriologist, oil chemist or control technician to assemble a bath with the precise capacity and control which any need requires.

Components described include bath jars, thermoregulators, bases, bath media, heaters, cooling coils, clamps, and thermometers. In addition to more simplified units, booklet describes unit capable of extreme sensitivity and regulation.

"Constant Temperature Baths" is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 7878 on handy Reader Service slip between pages 2 and 3.

**NOW**

**ALL** roll and dial  
recording charts  
from **ONE SOURCE**

Over 8000 different charts for recording instruments can be supplied by **Technical**. This unique service means savings in ordering . . . in receiving . . . in stocking . . . and in chart costs, too.

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When inquiring check CP 7879 on handy form, pgs. 2-3



for your New Laboratory, or . . .  
for Expansion

**METALAB** offers you  
the *Finest in*  
**LABORATORY EQUIPMENT**

WITHIN YOUR BUDGET



Let Metalab advise you on

- How to plan your Laboratory for greater efficiency.
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- How to get the most for your laboratory budget.

Our new modern plant is geared to give you the close cooperation and rapid service you require.

Rush your problems to us today!

Write for our complete catalog on Laboratory Furniture and Equipment.

**SECTIONAL** LABORATORY FURNITURE  
and EQUIPMENT by  
**METALAB**  
*Equipment Corp.*

230 Duffy Ave., Hicksville, L. I., N.Y.

When inquiring check CP 7880 on handy form, pgs. 2-3





# SLY PIONEERS and LEADERS in INDUSTRIAL DUST CONTROL



Soy Bean Mill. Two large double file Sly Dust Filters handling soy bean meal dust.

**SOY BEAN PLANT  
SAVES \$400 PER DAY  
Through DUST RECOVERY**

Because of the meal dust created in processing soy beans, this company\* included Sly Dust Filters, as standard equipment five years ago, in its original layout.

The Sly Filters collect 5½ tons of soy bean meal daily, at a value of upwards of \$400. Not only is the company highly pleased with these savings but also with the resulting cleanliness of its plant. Filter maintenance has been insignificant.

In crushing, shredding, pulverizing, loading, packaging, operations—in various process industries—dust is created. If valuable, the dust can be reclaimed profitably. Even if the dust has no value its collection pays off in cleaner plants, better working conditions and reduced costs.

Expertly designed and built, Sly Dust Filters offer many advantages in greater filtering capacity, easier bag replacement, automatic control, and other features which spell low cost operation.

MAY WE TELL YOU MORE ABOUT SLY FOR YOUR PARTICULAR APPLICATION?

\*Name upon request.

**THE W. W. SLY MANUFACTURING CO.**

4754 TRAIN AVENUE • CLEVELAND 2, OHIO  
New York • Chicago • Philadelphia • Syracuse • Detroit • Buffalo  
Cincinnati • St. Louis • Minneapolis • Birmingham • Los Angeles • Toronto

When inquiring check CP 7881 on handy form, pgs. 2-3

## LABORATORY

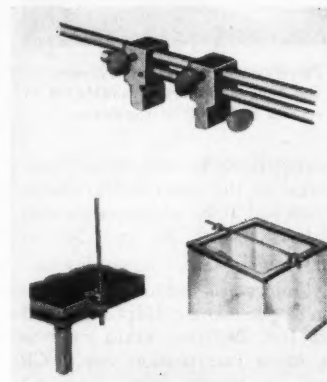
**"C"-clamp designed  
for variety of lab  
holding needs . . .**

fully adjustable unit has range  
from ¾ to 72"

**Uses:** Can be used across large baths with angle iron tops, to clamp a vertical rod to bench or table, to strengthen any type of support frame, to add shelves to any set up frames, and to hold any type of flat surface.

**Features:** Fully adjustable from ¾ to 72" or more as jaw opening is limited only by the length of rod used as spacer.

**Description:** The Alupaloy Adjustable "C"-clamp is constructed of special aluminum alloy and



Fully adjustable clamp accommodates either one or two ½" rods. Two of unit's many uses are pictured in photo

accommodates either one or two ½" rods. One rod is used to space jaws, while the other supports apparatus. Adjustments and tightening are accomplished by means of Allen head and large aluminum thumb screws.

(Clamps are products of Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. . . . or for more information check CP 7882 on form, pgs. 2-3.)

**Makes weighings  
in any gas  
mixture . . .**

micro balance also operates in vacuum at any temp

**Uses:** Available to micro-analyst, biologist, or physical chemist in many designs for all types of micro-weighings.

## NEW Corrosion-Resistant

*Speedline* fittings



**LOWER PIPING COSTS** result when you use *Speedline* fittings, because you can use lightweight Schedule 5 pipe. Increased ID of Schedule 5 pipe gives lines increased capacity.

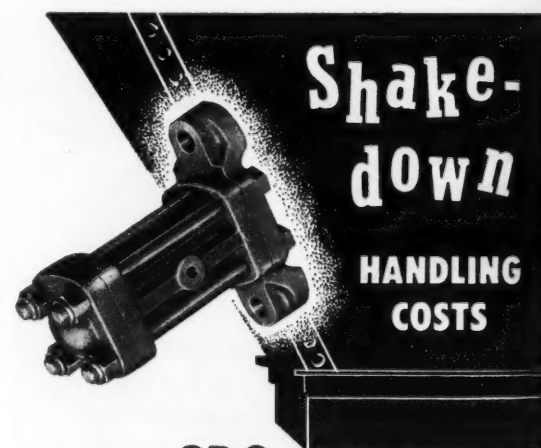
**RAPID INSTALLATION** is possible because the *Speedline* method often eliminates the need for welding or flaring.

Write for your copy of this 20-page *Speedline* catalog. It gives you the entire story.

**HORACE T. POTTS CO.** Since 1815

502 E. Erie Ave., Philadelphia 34, Pa.

When inquiring check CP 7883 on handy form, pgs. 2-3



**Shake-down**

**HANDLING COSTS**

**... WITH SPO AIR VIBRATORS**

Don't let bins become bottlenecks! Keep materials flowing and production moving with SPO air vibrators. These powerful low-cost units assure steady, jam-free flow of powdered or granular materials from bins, hoppers and chutes . . . prevent clogging and packing.

SPO vibrators feature a special corrosion-proof bronze alloy cylinder liner which assures full-power starting, high-speed operation, low air consumption and maximum service life.

Write today  
for  
Bulletin 50.



**SPO INCORPORATED**  
5631 GRAND DIVISION AVE • CLEVELAND 25, OHIO

When inquiring check CP 7884 on handy form, pgs. 2-3

CHEMICAL PROCESSING

## GET THIS NEW DRUM PUMP Idea Book!

New ideas in fluids handling

May we show you what this amazing little Fast-Flo Drum Pump has done in industry after industry?

An air-operated reciprocating pump, the 13½ lb. Fast-Flo operates on air as low as 35 PSI. It screws directly into 2" drum bung openings, or

can be clamped on tank sides. And Fast-Flo does not pressurize drums!

Fast-Flo can transfer, agitate, dispense . . . and be used as a supply pump for applying, mixing or spraying. It handles an almost unbelievable range of materials, many as thin as isopropyl alcohol, many as thick as cookie frostings.

SEND FOR  
FREE  
COPY



**GRACO**  
*Fast-Flo*  
**UNIVERSAL  
DRUM PUMP**

One of the applications in this new Fast-Flo book may suggest a better way to handle one of your operations, saving time, labor and money. Write today!

**GRAY COMPANY, INC.**  
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Regional Offices: New York, Philadelphia, Detroit, Chicago, Atlanta, San Francisco

When inquiring check CP 7885 on handy form, pgs. 2-3

## SPRAY NOZZLES

for chemical spraying, cooling, humidifying, dehydrating, and hundreds of other applications

You'll get the right nozzles quicker by calling Binks...manufacturers of one of the most complete selections ever produced. A wide range of spray patterns, sizes, capacities... with nozzles cast or machined from standard or special corrosion-resistant metals.

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3120-32 Carroll Ave., Chicago 12, Ill.

O. K. BINKS. Send me your Spray Nozzle Catalog...FREE!

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**Binks**

A COMPLETE LINE OF  
INDUSTRIAL SPRAY NOZZLES  
AND COOLING TOWERS

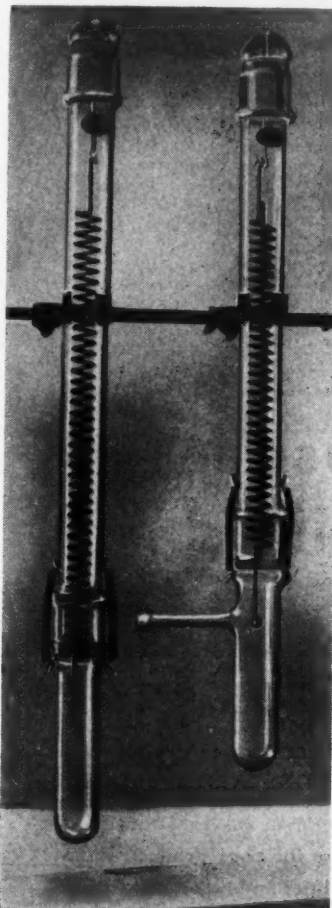
When inquiring check CP 7886 on handy form, pgs. 2-3

## LABORATORY

**Features:** Units operate in any gas mixture or in a vacuum at any temperature. Expansion of quartz fiber component is negligible at all ordinary temperatures.

Units are available in many designs for all types of micro weighings.

**Description:** Manufacturer of quartz helix balances describes quartz as the most nearly ideal material for small-scale weighing



Quartz helix balances are encased in Pyrex glass cases which offer increased sample protection

devices. Tensile strength is greater than that of steel. Quartz helices extend to full length without hysteresis.

(Products of Microchemical Specialties Co., Dept. CP, 1834 University Ave., Berkeley 3, Calif. . . . or for more information check CP 7887 on handy form between pages 2 and 3.)

## HEVI DUTY Multiple Unit HOT PLATES are essential in your Laboratory Set-up!



**Widely Used in Laboratories for:**

- HEATING AND EVAPORATING SOLUTIONS
- ALCOHOL AND ETHER EXTRACTIONS
- DRYING OF PRECIPITATES
- DISTILLING, BOILING, ETC.

"MULTIPLE UNIT" Hot Plates are available in seven standard sizes, all equipped with three heat switches for temperatures to 750° F. Special sizes can be made to meet your particular requirements.

Because of the uniform distribution of the heating elements, there is an even temperature over the entire top surface. The heating units are readily replaceable by the user resulting in economy of maintenance. For complete details,

SEE YOUR LABORATORY SUPPLY DEALER  
or write for Bulletin HD-835

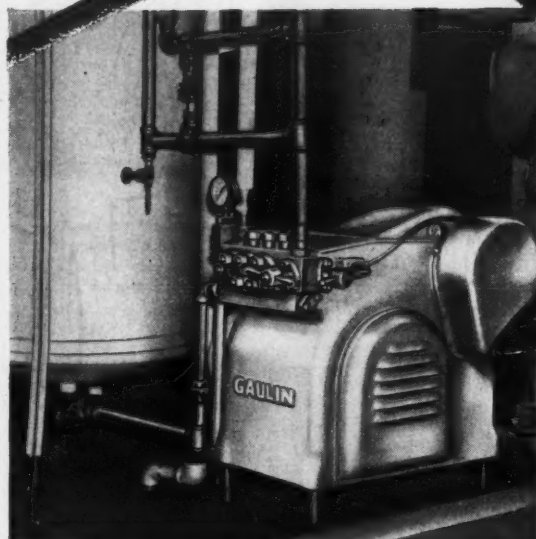
## HEVI DUTY ELECTRIC COMPANY

LABORATORY FURNACES **MULTIPLE UNIT** ELECTRIC EXCLUSIVELY  
REG. U. S. PAT. OFF.  
MILWAUKEE 1, WISCONSIN

When inquiring check CP 7888 on handy form, pgs. 2-3



# It's Uniformly Finer here



BRISTOL MEYERS installation at Hillside, N. J. showing 500 GPH Gaulin Homogenizer used in processing Vitalis Hair Cream.

## ...with a Gaulin Homogenizer

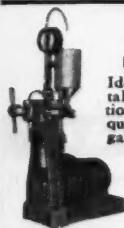
Cream oils look less greasy, feel less greasy... spread quicker, hold better when they're made with a Gaulin Homogenizer.

But most important, they **WON'T SEPARATE EVER**, because Gaulins break fluid particles smaller... disperse them evenly to make a *uniformly finer* emulsion or dispersion.

# because it's emulsified here

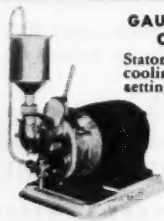
What's more, experience proves Gaulins emulsify them **FASTER, MORE ECONOMICALLY**, too.

Why not investigate for your product, today. Complete testing facilities and recommendations are yours — without obligation.



### GAULIN PILOT PLANT HOMOGENIZER

Ideal for experimental purposes, operation or process requiring up to 25 gallons per hour capacity. Handles quantities as small as one pint. Available on low rental basis.



### GAULIN TWO-STAGE COLLOID MILL

Stator is jacketed for cooling or heating. Gap setting adjustable for .001" to .045". Only 45 seconds clean-up required in changing colors. 12" x 17" head room. 12" x 17" floor area.



## Manton Gaulin

MANUFACTURING COMPANY, INC.

55 GARDEN STREET, EVERETT 49, MASS.

World's largest manufacturer of Homogenizers, Triplex Stainless-Steel High Pressure Pumps, and Colloid Mills

When inquiring check CP 7889 on handy form, pgs. 2-3

## FOR THE LABORATORY

### Device monitors temp climb in ASTM softening point determinations...

convenient burner regulator eliminates the problem of manual adjustment

**Uses:** Device used to regulate burner for ASTM Ring and Ball softening point determinations — Standard-ASTM D 36-26 and Tentative-ASTM E 28-42T procedures.

**Features:** Eliminates tedious burner adjustments which were previously made manually.

**Description:** Fisher-Kermac Regulator is a synchronous, motor-operated pressure regulator.

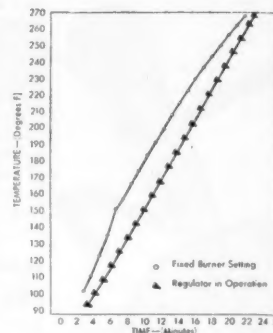
In the test an appropriate burner is selected for natural, artificial, or LP gases and adjusted to furnish initially-required heat. Extra heat needed to maintain proper temperature rise is added automatically as regulator unit increases pressure of gas entering the burner.

Regulator eliminates tedious manual adjustments of burner setting. Increasing heat loss of bath is compensated for as higher temperatures are reached.

Maker reports that unit saves about 30 minutes of operator's time when testing materials at 300°F and about 15 minutes when operating at 170-200°F.

By means of manometer, proper setting can be readily made after a few practice tests. Either water or glycerine baths may be used interchangeably by choice of correct initial gas pressure. Unit operates on 115v 60 cycle current.

(Fisher-Kermac Regulator is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pennsylvania... or for more information about this product simply check CP 7890 on handy Reader Service slip between pages two and three.)



Comparison between "climb" in heat with manual burner setting and Fisher-Kermac Regulator

### Versatile unit provides thorough blending

Versatility and effectiveness of unit for thoroughly blending powders, grains, pellets, and flakes in any combination are provided by twin-shell dry blender unit which is illustrated and described in 12-page catalog. Unit was designed to meet demand of chemical and processing industries for equipment which would meet the most exacting requirements for thorough blending of dry materials and is available in several sizes designed for both laboratory and production use. Photographs, drawings, tables, and text demonstrate its effectiveness.

In addition, bulletin covers characteristics, applications, capacities, power requirements, and other specification data for twin-shell, double-cone, and ribbon blenders, kettles, evaporators, stills, agitators, autoclaves, pilot-plant units, and heat exchangers. Cat 12 is issued by Patterson-Kelley Co., Inc., Dept. CP, 346 Warren St., East Stroudsburg, Pa. When inquiring specify CP 7891 on handy form, pages 2 and 3.

**Hand operated tester loads specimen at slow speeds . . .**

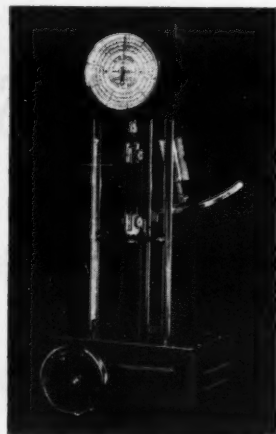
unit has two dials and five scales for versatility

**Uses:** Unit may be used for testing of materials according to standard procedures. Standard grips are available for wire, paper, wood, adhesives, rubber, springs, and other materials.

**Features:** Load is applied to specimen at slow speed and is capable of being stopped instantly. Two dials offer five individual scales for wide range of testing. Elongation reading may be made with same instrument.

**Description:** Dillon hand operated Multi-Low-Range testing machine is available with following grip clearances: 14-3/4", 24", 36", and 48". Basic dial is calibrated with four individual scales:

10 lb range with 1/2 lb divisions, 25 lb range with 1 lb divisions, 50 lb range with 2 lb divisions, and 100 lb range with 5 lb divisions. Dial calibrated for 0-300 lb with 1 lb divisions is also available.



Testing machine is versatile unit which may be used for many materials

Accuracy of unit is reported to be within 1/2 of 1% to meet ASTM requirements. Set of gripping fixtures for flat specimens up to 1/8" thick by 1-1/4" wide is included with each unit.

Overall height of unit is 64". Assembly

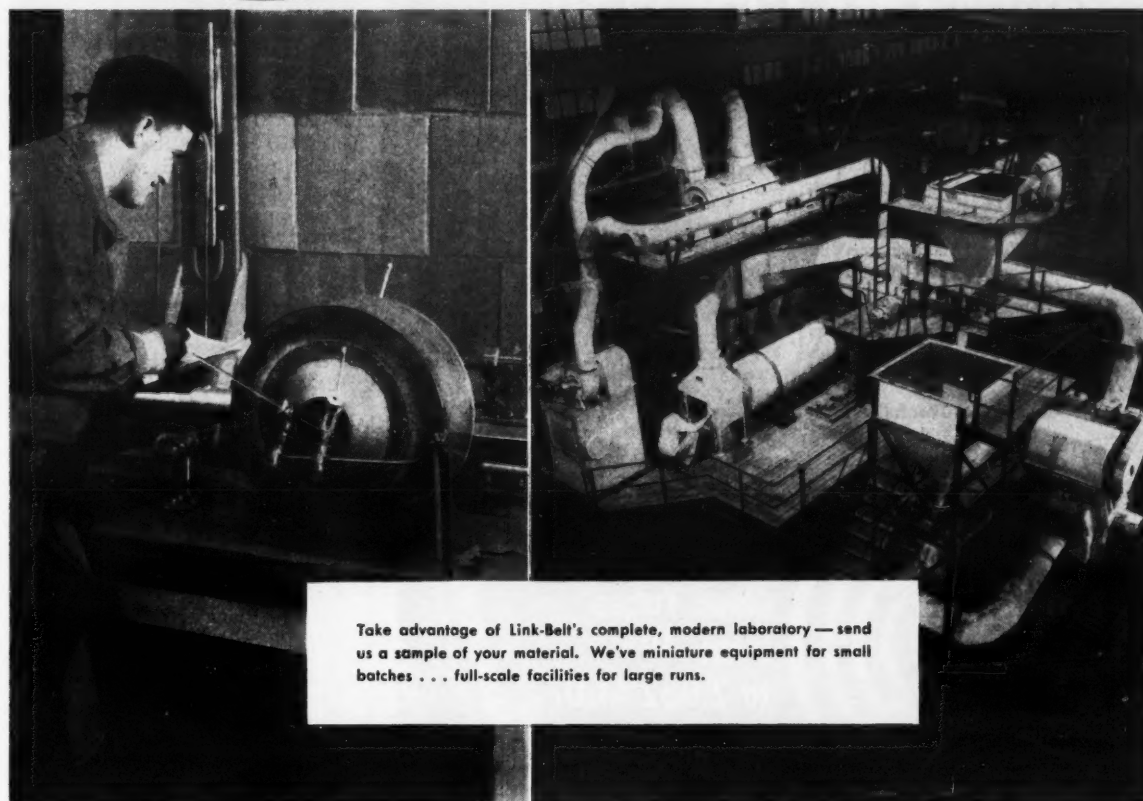
is finished in polished chromium and hammered gray enamel baked on. Pointer remains at peak load after specimen breaks, for convenience in reading maximum load.

Tests can be made in tensile, compression, transverse, and shear. Elongation readings are provided by means of special scale and traveling hair line attached to moving platen.

(Hand operated Multi-Low-Range testing machine is a product of W. C. Dillon and Co., Inc., Dept. CP, 14620 Keswick St., Van Nuys, Calif. . . . or for more information check CP 7892 on handy form, pages 2 and 3.)

**AN INVITATION  
to manufacturers  
with drying, cooling  
or roasting problems...**

**LINK-BELT will test a pound  
or a ton of your material**



Take advantage of Link-Belt's complete, modern laboratory — send us a sample of your material. We've miniature equipment for small batches . . . full-scale facilities for large runs.

**Whatever size the sample, we will test-run your material, work out procedures in this laboratory that can be duplicated in your plant**

If your production has been delayed or handicapped by drying, cooling, or roasting obstacles, there's an easy, no-obligation way you can get an immediate answer . . .

Follow the lead of hundreds of others who have utilized Link-Belt's scientific laboratory to test-run their materials. As a result of this testing and research, scores of different materials are now being processed by Link-Belt Dryers installed all over the world.

And here's an added Link-Belt service — if you can't ship samples, we'll put a unit on loan right in your own plant. Find out how you can put these Link-Belt services, plus Link-Belt experience, to work for you. Call the Link-Belt plant or office nearest you.

**LINK-BELT COMPANY:** Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

12, 424



When inquiring check CP 7893 on handy form, pgs. 2-3



# ROTOJET<sup>®</sup>

## Junior TUBE CLEANERS

### for SMALL TUBES

The new Rotojet Junior Tube Cleaner has unusual power to clean small tubes quickly. This convenient, compact, self-contained cleaner, designed for one-man operation, needs very little headroom. Tube bundles can be cleaned without removal from shell.

Roto expanding heads and brushes with replaceable wearing elements save money and assure thorough cleaning of straight and curved tubes.

Send for Bulletin J-410 for full details.



S328 ROTOJET Junior  
Water-driven Motor,  
flexible coupling, and  
expanding scraper

C434 ROTOJET Junior  
Air-driven Motor, flexi-  
ble coupling, expanding  
brush.

S32 ROTOJET Junior  
Air-driven Motor, cone  
cutter, universal joint.



## ELLIOTT COMPANY-ROTO DIVISION

141 Sussex Avenue

Newark 1, N. J.

When inquiring check CP 7894 on handy form, pgs. 2-3

## LABORATORY

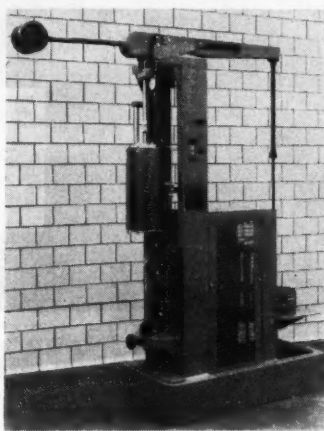
Testing machine gives  
info on "creeps",  
other uses . . .

and provides means of power  
lifting of loading weights

Uses: For regular creep testing  
and creep rupture testing of  
special alloy steels for use in high  
temperature applications.

Features: Loading weights are  
lifted by power-operated mech-  
anism. Lifting platform auto-  
matically positions itself 1/2" below  
weight pan. In this way shock of  
dropping weights is minimized  
when specimen breaks in stress-  
rupture tests. Base is constructed  
so that anchor bolts are not re-  
quired. Vibration isolator and  
leveling screws contribute further  
to stability.

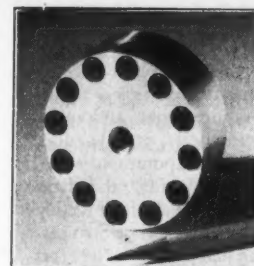
Description: Machine has large  
furnace with three heating zones  
for testing at temperatures up to  
1800 degrees F. This hastens  
attainment of uniform tempera-



Counter-balance allows easy vertical  
adjustment of furnace

tures over gage length of speci-  
mens. Temperature in three zones  
can be individually regulated from  
control panel. To simplify vertical  
adjustment, furnace is counter-  
balanced and has position indicat-  
ing scale. Locking arrangement  
prevents shifting during tests. Fur-  
nace windings may be quickly  
removed for inspection or repair.  
They are attached to an aluminum  
tube within a larger tube with air  
space between.

Temperature control equipment is  
mounted on stainless steel panel  
and can be removed as a unit.  
Wiring system is accessible from



## TRANS-SONICS<sup>®</sup>

### TYPE 40

### ISOLATORS

PROVIDE A SAFE MEANS OF  
TRANSMITTING PRESSURE FROM  
A SYSTEM CONTAINING CORRO-  
SIVE OR TOXIC MATERIALS  
TO A LIQUID FILLED INSTRU-  
MENTATION SYSTEM SUCH AS  
A PRESSURE GAGE.

The Type 40 Isolator is connected between the corrosive  
liquid or gas and any standard commercial pressure gage.  
The Isolator and pressure gage are filled with a suitable  
liquid so that pressure applied to the Isolator diaphragm  
will be accurately transmitted to the gage.

Type 40 Isolators consist of a special Kel-F diaphragm  
which is clamped in a corrosion resistant metal case.  
Standard case metals are 61S aluminum or 18-8ss. Other  
materials can be supplied for compatibility with specific  
liquids or gases.

To accommodate volumetric changes of the gage and  
filling fluid, Type 40 Isolators provide volumetric dis-  
placements of 1.6 cc or 5 cc. This displacement is ob-  
tained with negligible pressure drop across the Isolator  
diaphragm. Standard models are designed for burst-  
proof and safe operation at line pressures of 1000 psi or  
3000 psi.

Write for free Bulletin 40.

## TRANS-SONICS, INC.

Bedford 3, Mass.

The word "Trans-Sonics" is a trademark.

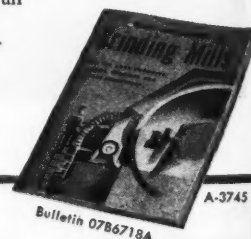
When inquiring check CP 7895 on handy form, pgs. 2-3

## GET COMPLETE FACTS ON GRINDING MILLS

• Pebble Mills • Ball Mills • Rod Mills

Write for this useful 44-page  
book, Bulletin 07B6718A. Full  
of helpful facts on:

- Grinding media action.
- Mill applications.
- Wet vs dry grinding.
- Grinding circuits.
- Critical mill speeds.
- Grindability indices.



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Milwaukee 1, Wis.

Company.....

Attention of.....

Address.....

City..... State.....

## ALLIS-CHALMERS

When inquiring check CP 7896 on handy form, pgs. 2-3



CHEMICAL PROCESSING

front or rear. When used in conjunction with one type of standard controller, specimen temperature has been held within 1 degree F at 1200 degrees F for long periods.

Specimen grips are heat resistant alloy steel and extension grips are heat treated and chrome plated steel. Lower extension grip is keyed to prevent rotation. Adjustable counter-balance on lever arm permits testing of sub-standard size specimens. Elongation of specimens may be observed on dial gage mounted on upper extension grip. An elongation indicator is being developed which will record values for a number of specimens automatically some distance away.

Capacity of machine is 12,000 lb. It occupies floor space 43 by 20 inches and is 84 inches high. Unloaded, it weighs 1000 lb.

(Product of the Arcweld Manufacturing Co., Dept. CP, 140 46th St., Pittsburgh 1, Pa. . . or for more information check CP 7897 on handy form, pages 2 and 3.)

**Measures color, turbidity of flowing or static liquids, gases . . .**

with recorder or controller makes measurements attaining accuracy of 0.5%

**Uses:** Makes a continuous measurement of flowing or static liquid or gas color. Can be used with recorder or with controller. Typical applications would be: color control in foods or beverages, chromate ion control in electroplating, color and turbidity records in water-treatment plants, exhaustion rate determination in dyebaths, measuring chlorine gas in air, controlling paper and bleaching.

**Features:** Accuracy of 0.5% in analysis can be transmitted to recorder or other device.

**Description:** Operation of the instrument depends on comparing a beam of light passed through sample to a beam passed through air as a reference. Light is supplied by a single tungsten lamp. Beam of reference phototube passes through a filter which permits selection of any portion of the spectrum between 350 and 1000 millimicrons. Second beam travels through a collimating lens, then through filter, finally through sample to a second phototube.

Output difference of the two phototube circuits is shown on a meter. It is also available at terminals to drive potentiometer recorders or controllers.

Highly corrosive materials may be handled by intermittently purging case with an inert gas. Inlet and outlet ports are provided for this purpose. Light source and two walls of cell compartment are jacketed with water tubes so that temperature can be controlled within two degrees of room temp.

(This Flow Colorimeter is a recent development of Beckman Instruments, Inc., Dept. CP, South Pasadena, Calif. . . or for more information check CP 7898 on handy form, pages 2 and 3.)

# Accidental Thermal Shock?

... THERE'S NOTHING  
FRAGILE ABOUT

# Lapp TUFCLAD



**SOLID Chemical Porcelain ARMORED with Fiberglass-**

## Reinforced Plastic

**Now** you can gain the advantage of solid chemical porcelain purity and chemical resistance in a system which offers extra protection to personnel, equipment and product. Lapp TUFCLAD armor—multiple layers of Fiberglass fabric impregnated and bonded to the porcelain body with an Epoxide resin of high strength and chemical resistance—cushions accidental blows, insulates against thermal shock. Besides, it is itself tough and strong—will hold operating pressures against gross leakage, even if porcelain is cracked or broken. WRITE for description and specifications on Lapp TUFCLAD porcelain valves, plug cocks, safety valves, flush valves, pipe, fittings and special shapes.

Lapp Insulator Co., Inc., Process Equipment Division, 532 Maple St., Le Roy, N. Y.



# Lapp

**PROCESS EQUIPMENT**

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS  
PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 7899 on handy form, pgs. 2-3

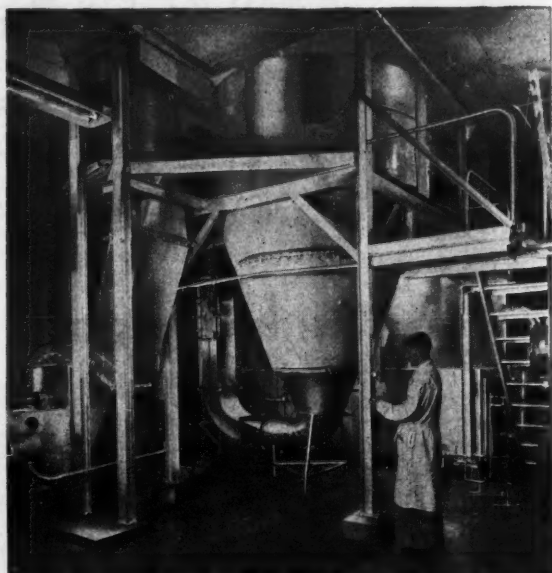


# Ready For Tests!

## The World's Most Comprehensive SPRAY DRYING LABORATORY

The new Bowen Spray Drying Laboratory provides the greatest range of test facilities:

1. The widely known Bowen Table Spray Dryer for testing small samples.
2. The popular Bowen No. 2 Spray Dryer for design data and market samples.
3. Bowen Production Unit for special problems.
4. Bowen counter-current spray chilling tower.



The broad scope of the test equipment provides the greatest flexibility of test conditions. Oil and gas heaters furnish inlet air temperatures up to 1000° F. Tests can also be made with indirect steam heater. Type 316 stainless steel drying chambers handle all materials without contamination. Atomization can be by nozzle or by patented centrifugal wheel.

Your presence during the test is requested. Skilled engineers are on hand to conduct tests and discuss your problems.

Other component parts of the laboratory such as the feed preparation room, storage and refrigeration, product collection room and fully equipped analytical laboratory are described in detail in a new interesting booklet which will be gladly sent on request.



Send for  
your copy  
**NOW!**



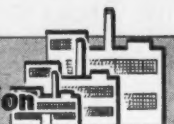
## BOWEN ENGINEERING, INC.

NORTH BRANCH 1, NEW JERSEY

SPRAY DRYERS - EVAPORATORS - DUST COLLECTORS

When inquiring check CP 7900 on handy form, pgs. 2-3

## Expanding Chemical Production



### Chemical industry reaches new high in '52 — predict slight decline

Production of the nation's chemical industry reached an all-time high in 1952, during which time the industry spent \$1.5 billion for new plants and equipment, it is reported by Charles S. Munson, president of Manufacturing Chemists' Association in a year-end survey. Production during this year, however, is expected to taper off, the report continues, although prospects for building program in the South and West appear bright.

Texas, Louisiana, Oklahoma, and Arkansas together can look forward to more than \$706 million new plants and equipment, counting only those new constructions covered by rapid amortization certificates.

Important factors contributing to expansion of the chemical industry in that area are the section's supply of raw materials — particularly petroleum and natural gas — and its access to low-cost water transportation to Eastern markets, Munson added.

Although additional expenditures for expansion this year may not be quite so great as in 1952, more money is being spent on research than ever before, and the flow of new products and better processes will continue and probably will increase.

Foreign trade in chemicals, both exports and imports declined during the past year, according to another report from the Office of International Trade, Washington, D.C. Exports during the first nine months were \$715 million, down \$145 million from the corresponding period of 1951. While certain segments of the import trade showed moderate increases, the overall figure for 1952 shows a decline of \$55 million from the \$396 million for the first nine months of 1951.

### Continental Oil completes research laboratory in Oklahoma

Continental Oil Company's \$2.25 million research laboratory at Ponca City, Oklahoma has been completed. The new building houses the company's Geophysical, Production, and Central Research laboratories.

### Monsanto, Heyden merge plans for Texas City methanol plant

Heyden Chemical Corp. and Monsanto Chemical Co. have agreed to build a methanol plant adjoining Monsanto's new acetylene facilities located in Texas City. Output of the proposed plant would

have approximately 25 million gal per year. Commercial production will begin in January, 1955.

Both companies will share equally in construction costs and the plant's output, made by using by-product gas from the acetylene operation.

According to terms of the agreement, the joint enterprise will continue for a period of years and provides for optional termination thereafter.

### \$13 million for ammonia plant planned near Los Angeles

Brea Chemicals, Inc., newly organized subsidiary of Union Oil Company, is planning construction of a \$13 million ammonia plant at Brea, Calif. The firm will manufacture ammonia from natural gas taken from wells near the site, 30 miles east of Los Angeles. Completion is scheduled for next year.

### Expand potash sulfate output to 35,000 tons per year

International Minerals & Chemical Corp. is constructing a new addition to its sulfate of potash facilities at Carlsbad, New Mexico and expects to produce approximately 35,000 tons of the material from the new expansion. Plant will be on the line around the beginning of 1954.

### Kansas plant expects to double US extender pigment output

Construction is expected to be completed in April on a northwestern Kansas plant that will more than double present national capacity of a diatomaceous material used as an extender pigment in latex emulsions paint and manufactured by the National Lead Company.

The new plant, located at Edson, Kansas will manufacture Lorite, used also in wall primers, undercoaters, deep tone flat wall paints, lustreless enamels, camouflage paints, traffic and zone marking paints. In addition to the above expansion, the firm has recently purchased several thousand acres of mineral-bearing lands near Jacksonville, Fla. The land contains titanium and zirconium ores.

### Construction of polystyrene plant begun in California

Dow Chemical Company has started construction on a plant at Torrance, Calif. for manufacture of Styron, a polystyrene plastics material.

The new plant, scheduled for completion next fall and being built on a 53-acre tract, will be part of the firm's three-phase program for increased production facilities. A large, new addition to the plastics building at Dow's Midland, Michigan headquarters is now in operation, and a newly-completed plant on the Thames River at Allyn's Point, Connecticut went into full production last October. Facilities at the Torrance plant will include equipment for manufacture of plastic granules in a variety of colors in addition to clear, uncolored material.

#### Processing of wood pulp for tall oil gets 6000 ton annual spurt

A new plant for production of high grade whole tall oil by processing sulfate wood pulp skimmings is now being operated by Crossett Chemical Co., a division of Crossett Lumber Co., Crossett, Ark. at the rate of 6000 tons annually.

The plant has a potential production rate four times that of its present capacity. Future plans call for the manufacture of refined as well as whole tall oil.

#### \$20 million step into nitrogen supply reaches plant stage

Grace Chemical Company, organized last year as a wholly-owned subsidiary of W. R. Grace & Co., international industrial and trading concern, is now engaged in its first manufacturing unit — \$20 million nitrogen plant near Memphis, Tenn.

The new plant is scheduled for completion in 1954. The concern currently is studying plans for construction of additional petro-chemical manufacturing units.

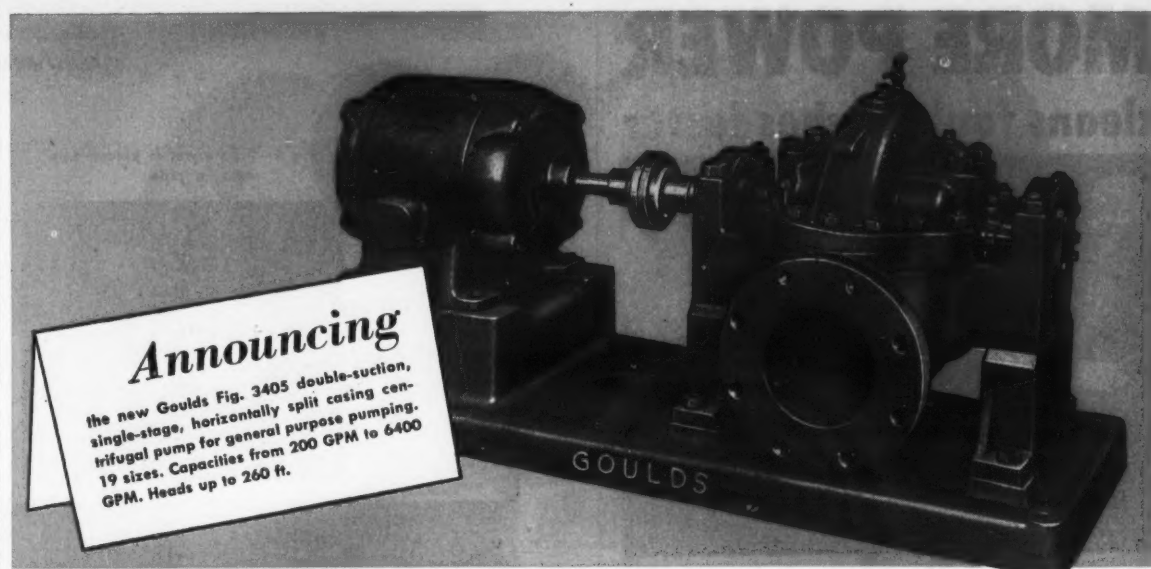
#### Polyesters at Du Pont will get further study at new lab

A two-story laboratory costing more than \$3 million for research and development work on Du Pont's polyester fiber Dacron will be built at the company's fiber plant site at Kinston, N.C. The new lab is slated for completion late in 1954.

#### See reduced rarity for rare earths

Construction was begun last October on a \$1,500,000 addition to the plant of the Lindsay Chemical Company, West Chicago, Illinois — world's largest producer of rare earths. Completion is expected around the end of 1953, with production anticipated for the beginning of 1954.

Thorium nitrate will be produced from Monazite sand. Sales of thorium are subject to AEC license and it is understood that a major part of the production will be sold to the AEC for its program.



## This new pump gives you 5 big cost advantages

The price you pay is only one element of the cost of a pump installation.

Good engineering practice also figures in the cost of pump breakdowns, low operating efficiency, changeovers to meet new conditions, replacement parts inventories, even the floor space the installation takes up.

Here's why the new Goulds centrifugal pump is designed to improve your cost experience in every one of those elements.

#### 1. It combines seven design features that mean maximum operating efficiency and minimum maintenance.

Every one of these construction features is standard with this new design. Together they offer you, without extra cost, a quality of service that's unique in its approach to general liquid handling.

- Renewable stuffing box bushings.
- Bearing housings sealed against moisture and dirt.

- Cowl-type glands suitable for use with quenching liquids.
- Stainless steel impeller keys.
- Teflon water seal rings.
- Die-formed stuffing box packing.
- Corrosion resistant gland bolts.

#### 2. Interchangeability of parts.

With only three shaft and rotating parts assemblies to provide for 19 pump sizes and 38 pump combinations, this new design offers you a remarkable range of interchangeable parts. A glance at the interchangeability chart on page 7 of the descriptive bulletin will show you:

- how this design gives you great flexibility in making field changes should your pumping requirements change;
- why the first cost of this unit is so low due to standardization in manufacture; and
- how this interchangeability helps

to reduce spare parts inventories.

#### 3. Compact construction.

You will be particularly pleased with the short over-all length of this new design. Short bearing spans cut lengths as much as 50%. This means a real saving in floor space.

#### 4. Flexibility of stuffing box.

You can use either conventional stuffing boxes or mechanical seals depending on requirements. And you can change from one to the other in the field if need be.

#### 5. Easy rotation change.

A unique device, locking shaft seals, permits you to change from right-hand rotation to left-hand rotation or vice versa in the field without construction changes.

More than 50 years of experience in meeting industry's needs for general purpose centrifugal pumps come to a climax in this design.

GET FULL DETAILS This 12-page illustrated bulletin, No. 721.6, covers the complete details of the new Goulds Fig. 3405, including specifications, interchangeability tables and performance curves. Be sure you have the whole cost-advantage story before you select another general purpose pump. Contact your nearest Goulds representative or mail the coupon below today.



GOULDS PUMPS, INC., Dept. CP, Seneca Falls, N.Y.

Please send me Bulletin No. 721.6 describing the new Fig. 3405 centrifugal pump.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

When inquiring check CP 7901 on handy form, pgs. 2-3



# MORE POWER

## cleans fouled tubes faster



### WILSON MODEL TP-301 TUBE CLEANER offers all these features

- More powerful
- Lighter weight—only 15 lb
- Shorter—only 13" overall
- Increased capacity—from ½" up to 2½" or even 3" OD tubes
- Will operate on air pressure as low as 50 lb
- Costs less than previous models

Here is the fastest, most economical tube cleaner on the market for refinery and process heat exchangers. The Wilson Model TP-301 is the only tube cleaner which can immediately remove deposits from completely plugged heat exchanger tubes. No matter how badly tubes are fouled, the Model TP-301 puts equipment back "on stream" with a minimum of manpower and a few hours work. • Use this high speed tube cleaner to step up profits, increase output and minimize downtime. • Write for Bulletin TW-1046

#### VARIOUS CARBIDE BITS AVAILABLE (Special Bits for Smaller Sizes)

- TYPE M BIT** An inserted two lip Helix type for general use 21/64" to 1 17/32" OD.
- SPE-DUR BIT** A straight flute type negative rake angle. A good three lip "chipper" for very hard deposits. 11/32" to 1 3/16" OD.
- TYPE K BIT** A two lip Helix type with adaptor for general use. 1/4" to 2 3/4" OD.

Representatives in all principal cities

**THOMAS C. WILSON, INC.**

21-11 44th AVENUE, LONG ISLAND CITY 1, N. Y.  
Cable address: "Tubeclean", New York

# WILSON

TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 7902 on handy form, pgs. 2-3

## construction and maintenance

Fig 1—Void cover is placed over hole in pipe



Fig 2—Glass tape is coated with liquid plastic



Fig 3—Coated tape is wrapped around pipe and cover



Fig 4—Impregnated glass mat is applied over tape

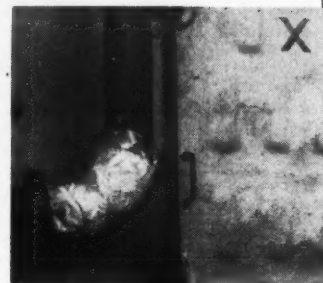


Fig 5—Finished patch is wrapped with paper

## Plastic Pipe Patch Can Be Applied in Seven Minutes

Provides hard, water-tight seal in approx  
½ hour, resists pressures up to 500-2000 psi

**USES:** Although originally designed for emergency pipe repairs in chemical plants and refineries, method may prove to be the answer to many other maintenance problems. Tests indicate procedure can be used successfully on lines carrying water, air, steam, gasoline, dry abrasives, and a variety of chemicals. Patch may be applied to such pipe materials as steel, iron, lead, glass, porcelain, and plastic.

Another application being investigated is the matter of using the method as a means of forming an armoring material for Pyrex or porcelain pipe to protect it against breakage. It is also being tested

on the outside of riveted storage tanks for preventing seepage.

**Features:** A trained crew can put the plastic patch on an elbow or straight pipe in seven minutes, on a flange in about 14 minutes. Patch can be applied by an unskilled operator in about 25 minutes. Material forms water-tight seal in 30 to 50 minutes.

It will resist pressures up to 500 psi or up to 2000 psi under ideal conditions. It withstands temperatures up to 450°F.

**Description:** Plastic patch is formed as shown in accompanying photographs. Plastic material

consists of two separate components which, when united, form a hard, tough, tenacious resin. Reinforcement is provided by fibrous glass cloth.

Since the mixture of plastic and activator solution does not solidify immediately, it can be applied while liquid and then allowed to harden. For this reason, flow from broken or leaky pipes is stopped by the patch. Jagged edges and odd shapes present no problem. Severed ends can be joined as well as "sunflower" type bursts. Rate of solidification depends upon such factors as the concentration of activator and temperature of materials and surroundings.

In order to repair a hole in a pipe, have pipe surface dry before starting patch. A void cover (fibrous glass with cured resin surface) is first placed over the opening. Then fibrous glass tape is coated with activated plastic resin, by allowing tape to pass through resin in can supplied by manufacturer. A stand with reels that fits in can simplifies this operation.

Pipe and cover are then wrapped with the coated tape. An impregnated glass mat is placed over the tape. This makes patch stronger and provides insulation for cure. Finished patch is wrapped with Kraft paper to prevent drips.

(Courtesy of Cordo Chemical Corp., Dept. CP, 230 Park Ave., New York 17, N. Y. . . . or for more information check CP 7903 on handy form, pages 2 and 3.)

## Corrosive solutions can be heated efficiently with direct fire gas burner

Admits gas flame through wall of tank into tube immersed in acid solution

**USES:** For heating corrosives such as sulfuric chromic, and phosphoric acids, sulfate solutions, and similar liquids.

**Features:** So efficient is this type of direct heating, that small burner installations are said to heat large volumes of acid quickly.

**Description:** Direct fire gas burner operates by admitting gas flames through the wall of tank into a tube which is immersed in the acid solution. Tube is made of Ferrolum lead clad steel, which is said to combine the strength of steel with the ability of lead to resist corrosives. Unit is reported to have good resistance to a wide variety of concentrations of corrosives at various temperatures.

Tube at extreme right of picture feeds gas into mixer which is equipped with twin regulating screws to control flow of gas and lock adjustment into place. Opening at opposite end of mixer admits air. Burner is ignited at this point. Flame then passes through flame nozzle into tube shown at left. In service,

(Continued on next page)



## WELDING FITTINGS for CHEMICAL PROCESS Service

### QUALITY Stainless Steel Butt Welding Fittings in Schedule 5 - 10 - 40 and tube O. D. Sizes from 1/2" through 24" and 36"

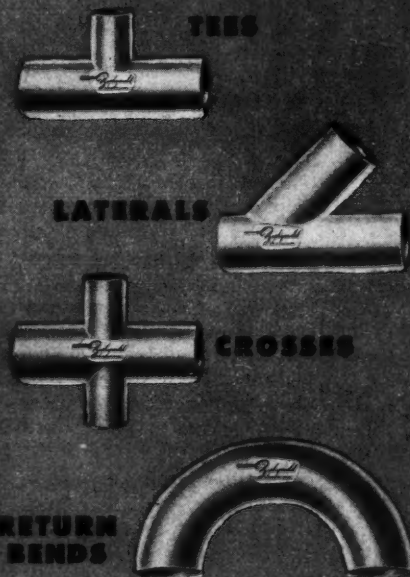
• TRI-CLOVER offers the most complete line of Zephyrweld Schedule 5 and 10 stainless steel welding fittings in sizes from 1/2" through 24" and 36" for use with stainless steel light gauge pipe and tubing. In addition, Schedule 40 fittings are available in sizes through 24".

These quality fittings are annealed, pickled and passivated in sizes through 4". Larger sizes are passivated and may be annealed upon request.

Employing modern, unique and proved methods throughout, these porosity-free fittings are fabricated from stainless steel types 304, 347, 316 and other stainless steel analyses.

Schedule 5 and 10 fitting ends are cut flush for rapid welding. Because of their light gauge, no chamfering is required. Schedule 40 fittings are beveled in accordance with ASA specifications. Fittings can be flame cut for disassembly, used again by re-welding.

See your nearest distributor for full details.



... Included in the Zephyrweld fittings line are reducers and adapters to permit their use with practically every other known type of fitting.

### WRITE FOR CATALOGS

Send for CATALOG 746, covering welding fittings for O.D. tubing—or for CATALOG 1057, covering Schedule 5-40 and 10-40 fittings for light gauge pipe.

**Tri-Clover**  
MACHINE CO.  
Kenosha, Wisconsin

TRI-ALLOY AND STAINLESS STEEL  
SANITARY FITTINGS, VALVES,  
PUMPS, TUBING, SPECIALTIES

FABRICATED STAINLESS STEEL  
INDUSTRIAL FITTINGS AND  
INDUSTRIAL PUMPS

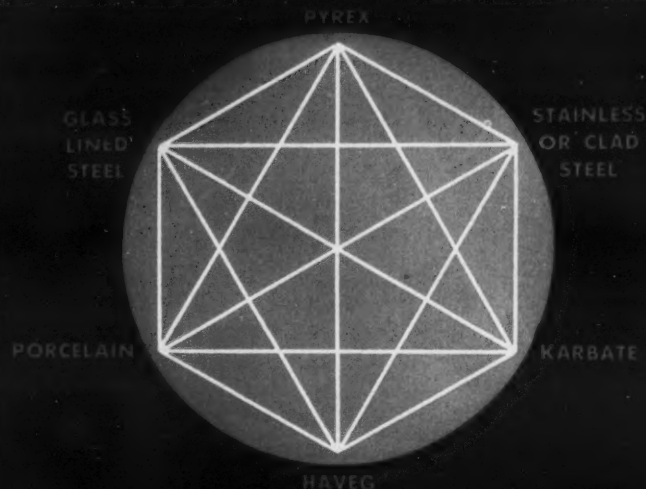
THE Complete LINE

PL-152H

When inquiring check CP 7904 on handy form, pgs. 2-3



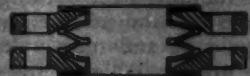
# CHEMISEAL MADE OF TEFLO<sup>®</sup> CONNECTIONS



## Join All Types of Chemical-Resistant Pipe and Equipment



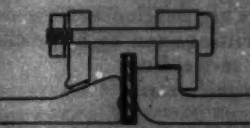
Chemiseal Teflon-Jacketed Gaskets, Types T6N or T6-300 are standard for Corning conical flanges, seal at unusually low bolt loads.



Chemiseal Flexible Couplings No. 202—(Teflon Bellows with two or three convolutions) and Chemiseal Expansion Joints No. 212—(several convolutions), for use in absorbing thermal or mechanical movement and vibration, protecting costly piping. Sizes 1 in. to 12 in. I.P.S. Require no gaskets or adaptors to join unlike piping ends and materials.



Chemiseal Snap-on Type 820 Gaskets. Teflon molded to match contour of conical end glass pipe, assure perfect centering of joints—free flow of materials. For all standard pipe sizes, 1/4 in. to 6 in.



Chemiseal Teflon-Jacketed Adaptors No. 2-CRS, provide a tight, safe seal between unlike piping ends and nozzles. A steel bearing ring provides rigidity. Resilient core assures safe seal at low bolt loads. Teflon Jacket protects and contains easy-to-handle single unit.

**UNITED STATES GASKET COMPANY**

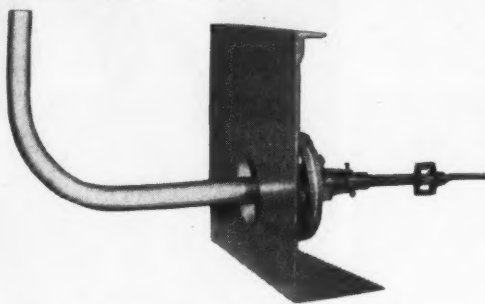
FLUOROCARBON PRODUCTS DIVISION  
CAMDEN 1, NEW JERSEY  
Representatives in Principal Cities Throughout the World



When inquiring check CP 7905 on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

(Continued from preceding page)



Immersion-type gas heater for acid solutions

this tube will be inside the tank and immersed in the acid solution.

Since lead is chemically bonded to the outside of the steel pipe, heat transfer is excellent. Temperature developed in heater is so rapidly dissipated by surrounding solution as to prevent any injurious effect on lead itself.

(Ferrolum immersion-type gas heater is product of Knapp Mills, Inc., Dept. CP, 23-15 Borden Ave., Long Island City, N. Y. . . or for more information check CP 7906 on handy Reader Service slip, pages 2 and 3.)

### Odorless paint takes scrubbing — can be washed 48 hours after application

Tropilux is odorless, oil-base, flat paint intended for coating interiors made of old painted plaster, cement, wallboard, or masonry. Manufacturer reports that "We formulated Tropilux flat to stand a lot of scrubbing, and actually it could be washed down within 48 hours of application."

Applied by brush, roller, or spray, coating levels out free of brush marks and holds wet edge long enough to pick up laps without marks. It is self-priming, fast drying, and reported to have excellent one coat coverage. Paint is available in variety of colors, which can be inter-mixed for other tones or tinted with colors ground in linseed oil.

(Tropilux paint is product of The Tropical Paint & Oil Co., Dept. CP, 1210-52 W. 70th St., Cleveland, Ohio. . . or for more information check CP 7907 on handy form, pages 2 and 3.)

### Light container construction permitted with pressure balancing valves . . .

two types are available, one to prevent crushing and the other bursting

**Uses:** To prevent excessive pressures inside or outside of containers. One application is in lightweight, hermetically sealed containers used for shipping delicate electronic and other types of sensitive

# STOP COSTLY WATER HAMMER NOW!

WILLIAMS-HAGER  
FLANGED

*Silent*  
CHECK VALVES

Williams-Hager Flanged Silent Check Valves are the economical and dependable answer to troublesome and costly "water hammer" in all pump lines. These valves operate effectively in horizontal, vertical, upside down or angular positions—under any service or pressure condition.



WRITE FOR  
BULLETIN WH-451

This bulletin gives complete details on the cause, effect and control of damaging "Water Hammer." Use the coupon below for prompt delivery of your copy.



CHECK VALVES

**THE WILLIAMS GAUGE CO.**  
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Please send a copy of Bulletin WH-451 on "Water Hammer, Cause, Effect and Control in Piping Systems."

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When inquiring check CP 7908 on handy form, pgs. 2-3

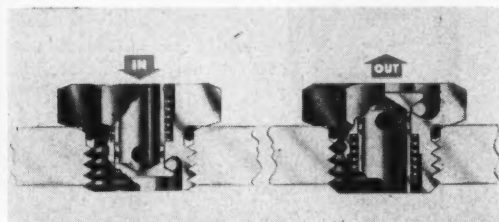
CHEMICAL PROCESSING

equipment. Other uses of valves of this type are as vacuum breakers or breather valves, where precise opening is required but where leakage in reverse direction cannot be tolerated.

**Features:** Valves prevent over-pressuring or under-pressuring of containers which would otherwise result from internal or external temperature changes or in ambient pressure variations.

**Description:** These low-pressure relief and vent valves are able to hold back pressure below valve opening pressure with zero leakage for indefinite periods of time.

Typical valves of this type are P-249 and P-262, which are illustrated. Former is designed to prevent build-up of internal pressure. When pressure ex-



Valves prevent excessive pressures outside or inside of containers without leakage in reverse direction

ceeds setting of spring, poppet opens to allow flow out of container. As soon as internal pressure drops below spring setting, poppet closes against resilient, floating O-ring, providing quick, dead-tight sealing. P-262 functions similarly when pressure outside container exceeds that inside. Valve opening pressures can be pre-set at factory to meet requirements. Other types are available which are externally adjustable. (Product of James-Pond-Clark, Dept. CP, 2181 Foothill Blvd., Pasadena 8, Calif. . . . or for more information check CP 7909 on handy form, pages 2 and 3.)

#### On-the-machine sharpening adds lift to single-point tungsten carbide tools

**Uses:** Hand hone can be used to sharpen single-point tungsten carbide cutting blades while they're on the machine.

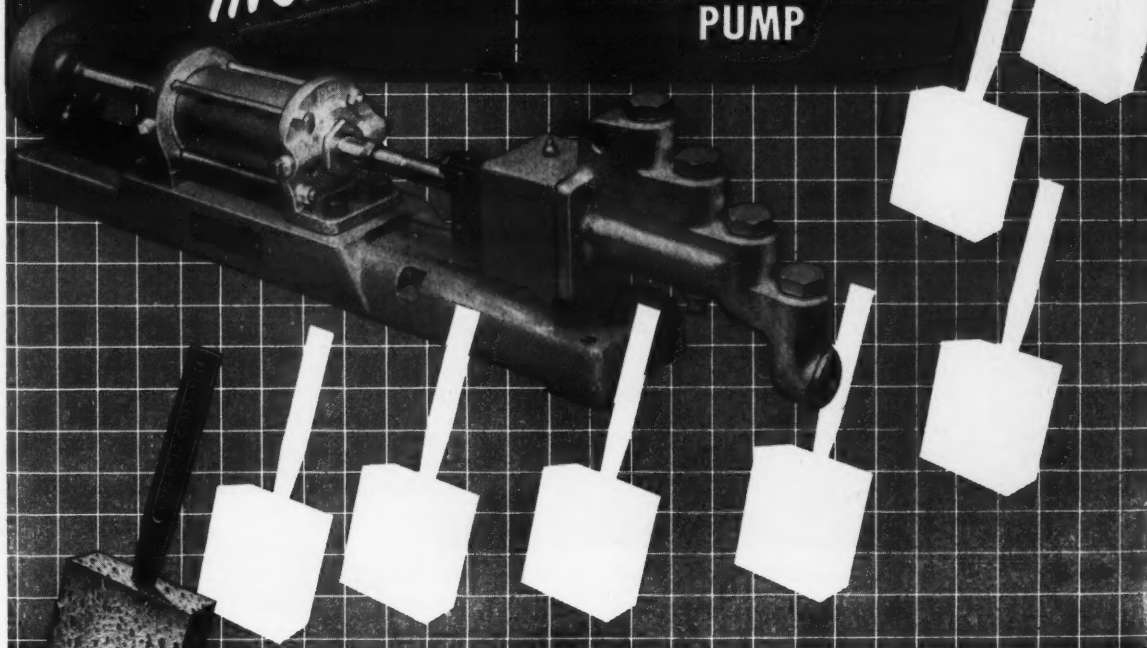
**Features:** Manufacturer reports that up to 30% longer tool life results when hone is used between grinds or at first sign of dullness.

**Description:** User merely applies a few light strokes over tool edge, taking care to hold hone flat against surface in order not to round cutting edge or change relief angle. Made from silicon carbide, hone is bonded with manufacturer's exclusive vitrified bonding process. Hand hones are available in all sizes for hand honing carbide tools.

(Product of Chicago Wheel & Mfg. Co., Dept. CP, 1101 W. Monroe St., Chicago, Ill. . . . or for more information check CP 7910 on handy form, pages two and three.)

# 700% PRODUCTION INCREASE

## with this MILTON ROY AIR-POWERED CONTROLLED VOLUME PUMP



It happened at O-CEL-O, Inc., Buffalo, N.Y., manufacturers of cellulose sponges, when the company installed a Milton Roy "aiROYmetric" Pump for a key production process.

The operation consisted of pumping a measured amount of glue into each sponge so that a plastic handle could be attached. The pumping process replaced manually operated equipment.

With use of the Milton Roy "aiROYmetric" Pump and other associated equipment, O-CEL-O was able to produce in one hour

the number of plastic handle sponges which formerly took eight hours—a production increase of 700%!

The "aiROYmetric" Pump feeds 0.8 gallons of glue per hour at room temperatures against a pressure of 35 pounds per square inch. O-CEL-O's engineers report that the pump has performed dependably since installation, with 75% less maintenance time.

Performance in this operation demonstrates the versatility of Milton Roy Controlled Volume Pumps. Precision metering instruments, they are designed to pump practically any liquid in measured

volume. Their metering accuracy, in most applications within a fraction of 1%, extends over their capacity range—3 milliliters to 405 gallons per hour. They operate against discharge pressures up to 25,000 pounds per square inch.

It will be worth your while to consider these versatile pumps if your requirements call for precise metering of liquids in controlled volume. For additional information on Milton Roy Air-Powered or Motor-Driven Controlled Volume Pumps, write us. Or call our representative listed in your classified telephone directory.

Manufacturing  
Engineers



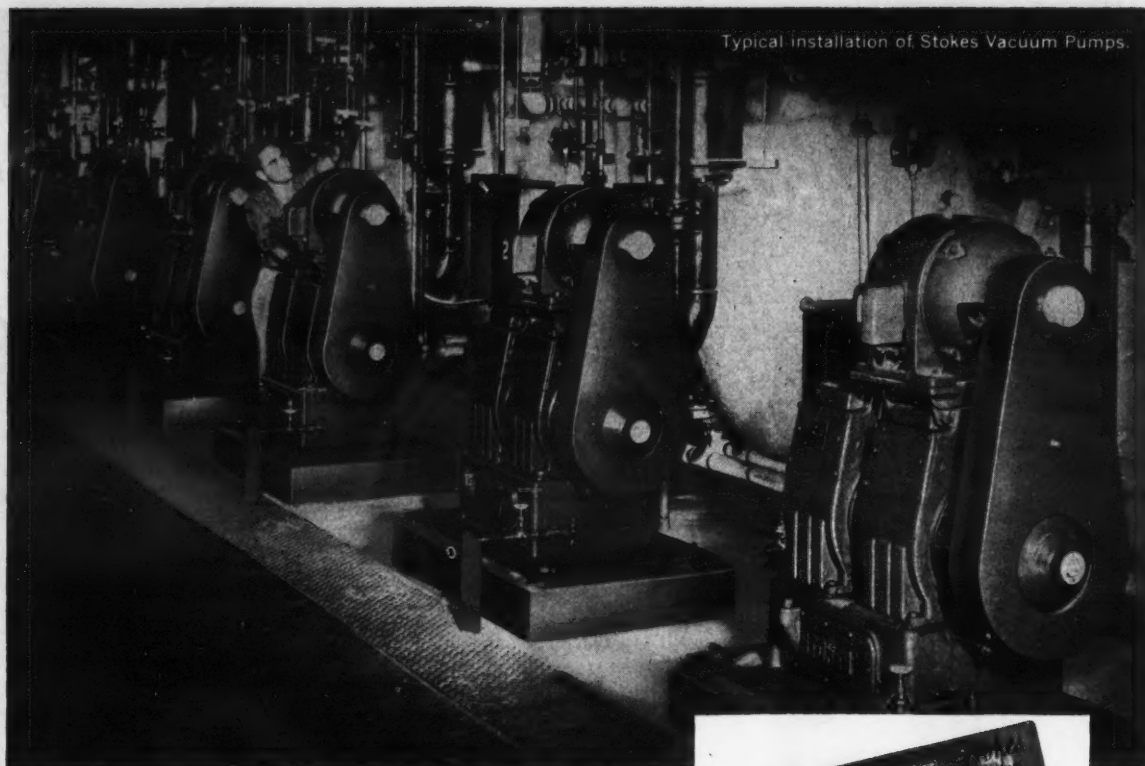
# MILTON Roy COMPANY

1354 EAST MERMAID LANE, PHILADELPHIA 18, PA.

CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

When inquiring check CP 7911 on handy form, pgs. 2-3





Typical installation of Stokes Vacuum Pumps.

## Stokes Microvac Pumps... basic to Vacuum Processing

High volumetric and mechanical efficiency make these famous pumps economical and reliable units in any vacuum system.

Capacities of Stokes Microvac Pumps run from 15 to 500 cfm . . . pressures to 10 microns absolute. Power consumption is low and the top-mounted motor contributes to compact design requiring minimum floor space.

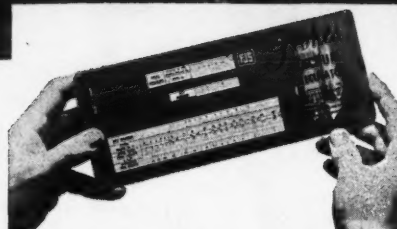
Lubrication of the four moving parts (including the exhaust valve of corrosion-resistant Teflon) is fully automatic. There are no stuffing-boxes or grease-fittings, and no packing.

Parts are precision-finished, standard and interchangeable. Freedom from wear assures years of trouble-proof service.

Stokes is the only manufacturer of equipment for complete vacuum systems, including Microvac mechanical pumps, oil diffusion pumps, McLeod Gages and Vacuum Valves.

Consult with Stokes on the application of vacuum to drying, freeze-drying, impregnating, extraction, solvent recovery, evaporating, vacuum metallizing, and to other purposes for which vacuum deserves exploration.

F. J. STOKES MACHINE COMPANY,  
PHILADELPHIA, PA.



Send for new Vacuum Calculator for rapid slide-rule calculations. Includes standard ABCD log scale. Also send for Catalog 700, "Stokes Microvac Pumps for High Vacuum," with copious reference material.

# STOKES

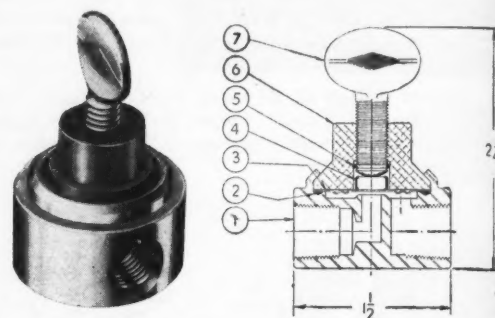
STOKES MAKES Plastics Molding Presses/Industrial Tableting and Powder Metal Presses/Pharmaceutical Equipment/Vacuum Equipment/High Vacuum Pumps and Gages/Special Machinery

When inquiring check CP 7912 on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

### Packless globe valve for hydraulic, vacuum or pneumatic lines

Systems carrying oil, water, gas, or corrosives may utilize the Demi-G packless, tamper-proof, globe valve for their hydraulic, pneumatic, or vacuum lines. Brass and aluminum constructed valves are serviceable with pressures up to 1500 psi, while



Dimensional and exterior construction of packless valve for hydraulic, pneumatic or vacuum lines

stainless steel, Monel, and nickel models may be used with higher pressures. Standard size has maximum 1/4" IPS or 1/4" integral tubing connections.

As shown in photograph, the body (1) is made of bar stock; diaphragm (3) is sealed in place between bonnet (6) and gasket (2) and retained by swagging. Valve is operated by actuator (7) thrusting the button (4) against diaphragm to seal the inlet port.

(Demi-G valve is manufactured by George W. Dahl Co., Inc., Dept. CP, Bristol, R. I. . . or for more information check CP 7913 on handy form, pages 2 and 3.)

### Reduction in weight and size contributes to value of motor starters . . .

time and labor for installation are reduced and smaller housings are used

**Uses:** As motor starter where space limitation is an important factor. It is designed specifically for manufacturer's explosion-proof housing.

**Features:** Reduction in size and weight of units is said to reduce initial costs and make installation faster and easier than it can be accomplished with conventional controls. Use of lighter and smaller supporting racks is another notable feature, particularly in multiple installations.

**Description:** The RA-V Magnetic Motor Starter incorporates vertical overloads below the contactor, and is intended for manufacturer's M52, Type EPC Explosion-proof Condulet. Size 2 starter requires only 7" housing instead of usual 9": size 3 uses 9" instead of 11": size 2 replaces size 0 or 1 starter but uses same 7" Condulet and

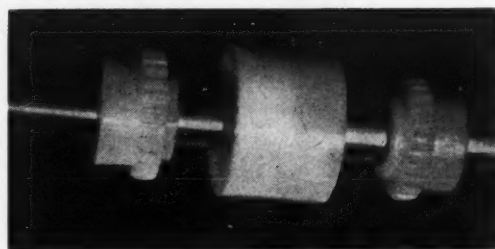
provides more power. A size 5 starter is available to be housed in an EPC Condulet as well as a size 4 installed in an 11" housing.

(Magnetic Motor Starter is product of The Arrow-Hart & Hegeman Electric Co., Dept. CP, 103 Hawthorn St., Hartford 6, Conn. . . or for more information check CP 7914 on handy form, pages 2 and 3.)

### Lightness and strength furnished in small gear coupling . . .

Nylon unit is non-corrosive, needs no lubrication.

Gear coupling is announced for smallest fractional hp drives with same features widely used for larger units. Weighing only 2½ ounces, coupling is strong and durable. Since it is made of Nylon, it is non-magnetic and withstands corrosion. Unit requires no lubrication.



Small size coupling consists of two externally geared hubs enclosed in internally geared sleeve

Coupling is small and compact. It has two externally geared hubs enclosed in an internally geared sleeve that takes any size hub from 3/8 to 3/4" bore.

(Junior Gear Type Coupling is product of John Waldron Corp., Dept. CP, New Brunswick, N. J. . . or for more information check CP 7915 on handy form, pages 2 and 3.)

### Engineering Information on spray nozzles

Colorful 20-page bulletin deals with engineering specifications and applications of several types of spray and atomizing nozzles. Separate sections of booklet treat atomizing nozzles, spray nozzles, and spray nozzle clusters. Information given for each type of nozzle includes construction details, spray characteristics, and capacities. Dimension tables, capacity charts, and drawings supplement text material.

Typical uses of various types of nozzles include washing solids from gases; atomizing, washing, and aerating liquids; and absorbing gases. They are applied to such processes as cooling and refrigerating, mixing, washing, and coating.

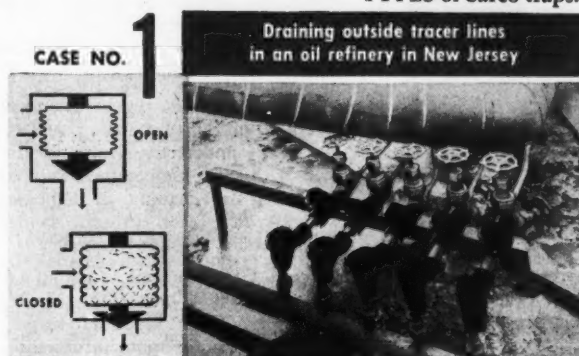
Bul 6-A is issued by Dept. J-K, Schutte and Koerting Co., Dept. CP, Cornwells Heights, Bucks County, Pa. When inquiring specify CP 7916 on handy form, pages 2 and 3.

# here's why they selected 4 different types of steam traps for 4 different applications

CONDITIONS under which steam traps must operate vary widely, but there is for every service one type that gives maximum efficiency.

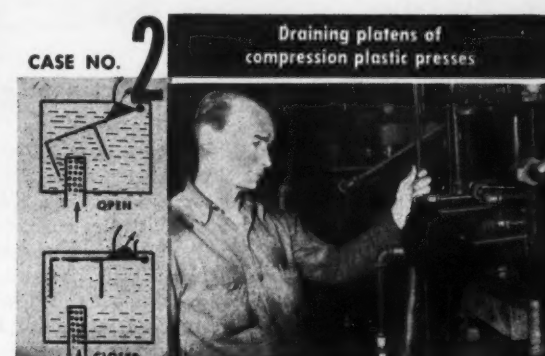
Sarco makes the 4 distinctly different TYPES of steam traps shown below. Therefore, Sarco can give you *impartial* advice on the best choice for your particular installation.

For each of the 4 jobs listed below, the users selected four different TYPES of Sarco traps.



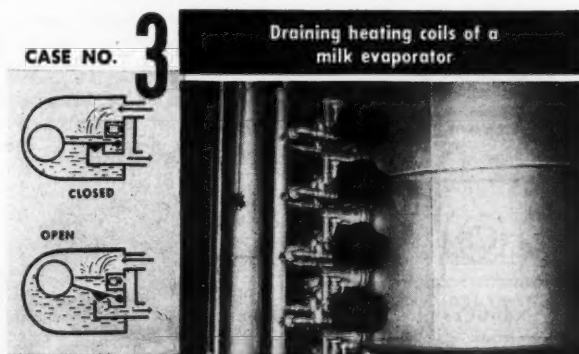
Type of traps installed: Sarco No. 9 thermostatic traps.

Why selected: Being thermostatic, they are steam misers. Can't freeze, being wide open when cold. Easy to maintain since only the bellows moves. Small, light and easy to install. Self-adjusting for different pressures.



Type of traps installed: 100 Sarco Inverted Bucket traps in service for 17 years.

Why selected: Press platens have small horizontal steam spaces; the intermittent blast discharge of these Sarco traps scours the heating surface. Built-in strainer cuts maintenance costs.



Type of trap installed: Sarco Float-Thermostatic Trap.

Why selected: Heating surfaces of the coils must be kept full of live steam—this Sarco trap discharges condensate as it collects. Can't airbind because the integral thermostatic vent gets rid of air, regardless of operating steam pressure and temperature. As shown in sketch 3 above, this vent does *not* depend upon the discharge of condensate.



Type of traps installed: Sarco LIQUID EXPANSION traps No. 871.

Why selected: Traps on tankers are exposed to freezing weather and vibration. Sarco's No. 871 traps can't freeze; resist vibration, water-hammer, pressure pulsations and superheat. These traps discharge condensate at adjustable temperatures below 212°F., permitting use of some of the condensate's sensible heat.

• Write today for Bulletin No. 145-A:  
**Selecting the Right TYPE Steam Trap.**  
Sarco Company, Inc., Empire State Bldg.,  
New York 1, N. Y. Represented in principal  
cities. Sarco Canada Ltd., Toronto 8, Ontario.

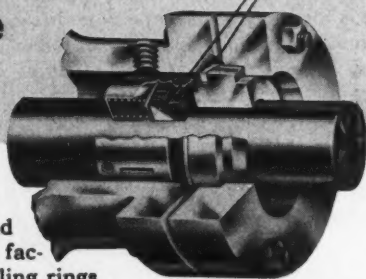
**SARCO** saves steam  
improves product quality and output

When inquiring check CP 7917 on handy form, pgs. 2-3



# new mechanical seal JOHN CRANE with TEFLON\*

## Solves Corrosion and Temperature Problems...

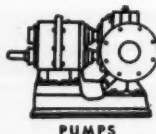
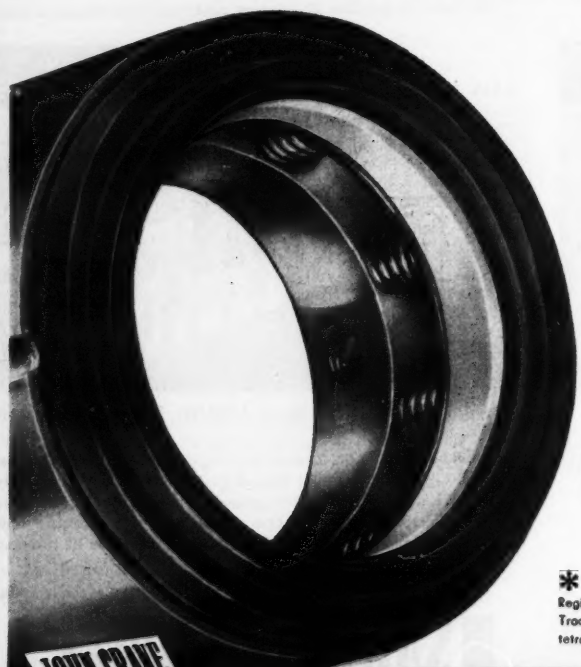


With the new Type 9 John Crane Mechanical Seal, proper sealing of chemicals and corrosive liquids is no longer a factor. Its flexible wedge and sealing rings are molded of the remarkable new plastic Teflon, which is not affected by any industrial chemical.

The successful development of two years research and field testing, this revolutionary seal handles corrosive liquids never before controlled effectively by conventional, flexible type mechanical seals. Thus, John Crane designing experience is effectively combined with the unique properties of Teflon: chemical inertness, extremely low friction and high heat resistance. Type 9 Seal can be employed at temperatures up to 500°F.

### WRITE TODAY FOR NEW BOOKLET

describing the John Crane Type 9 Shaft Seal. Crane Packing Co., 1821 Cuyler Ave., Chicago 13, Illinois.



\*  
Registered DuPont  
Trade-mark for  
tetrafluoroethylene resin

**JOHN CRANE**  
**CRANE PACKING COMPANY**

When inquiring check CP 7918 on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

**No primer is necessary  
for enamel that dries  
in 1 to 2 hours**

Film hardness approximating  $\frac{3}{4}$  that of plate glass may be obtained with Liquid Glaze enamel after an air drying period of three or four weeks or a 30 minute infrared treatment. A tough, glossy surface is apparent after air drying for one to two hours.

Single coat may be applied by brush or spray (with thinner) to all refinishing work: however, two coats are generally necessary for all new surfaces. On plaster work, it is not necessary to prime with shellac and customary six month wait for plaster to set has been reduced to one or two weeks. Enamel is intended for interior or exterior application to metal, wood, glass, masonry, aluminum, and magnesium surfaces. Its coverage averages about four-hundred square feet per gallon.

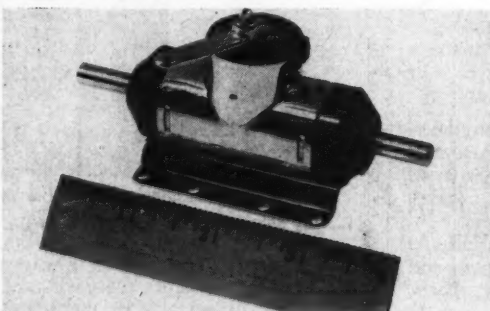
Glazed surface is reportedly flexible and resists deterioration by steam, water, and common chemicals including moderately strong alkalis and acids. It will withstand temperatures up to 225°F and is unaffected by changes in temperature. Although white is only color currently available, other colors can be obtained upon request.

(Liquid Glaze Enamel is manufactured by Rex Industrial Paint Works, Div. of Rex Home Supply Co., Dept. CP, 142 S. Highland Ave., Ossining, N. Y. . . . or for more information check CP 7919 on handy form, pages 2 and 3.)

### Equip miniature speed changer with lever control

**Uses:** In speed changing applications calling for either local speed settings or remote control with connecting links, cams, cranks, or similar mechanisms.

**Features:** Lever on speed changer is easily oriented independent of pointer to any horizontal position or it can be removed to provide a versatile

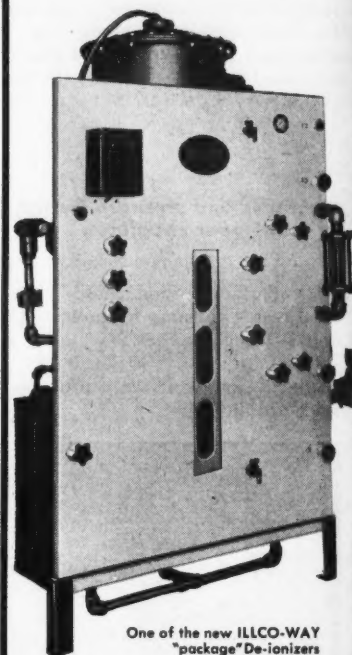


Lever control may be seen at top of miniature variable speed changer

speed control shaft in vertical axis. Remote ratio indication on a scale of any size can be arranged by a scale associated with the remote speed regulator.

**Description:** Type 3B is similar in construction to type 3A miniature variable speed changer described on page 74 of the October, 1952 issue of

## De-ionized Water in a "package"



One of the new ILLCO-WAY  
"package" De-ionizers  
(Mixed-Bed type)

**A** complete line of standard (package-type) De-ionizers—for production of solids-free De-ionized water used for solution make-up, rinsing, sealing rinse after anodizing (flow rates from 100 to 1000 gph.).

Units are compact, shipped completely assembled and base-mounted for ease of installation and operation, requiring only connection to raw water, drain and treated water outlets.

Three types: Mixed-Bed and standard two-bed, with or without silica removal. Ideal production units; convenient for laboratory and pilot-plant research.

Send for your free copy . . .

of Bulletin PK-152 to get general unit specifications, complete description of equipment and performance data. Please write on company letterhead. Address: Illinois Water Treatment Co., 903-2 Cedar St., Rockford, Illinois.



ionXchange

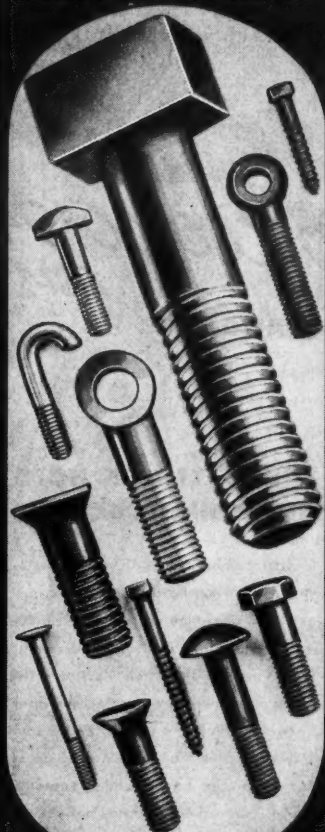
When inquiring check CP 7920 on handy form, pgs. 2-3

CHEMICAL PROCESSING

THREADED SPECIALTIES

# TEE BOLTS

by an  
exclusive method



Among Pawtucket's many specialty products, these lower-cost tee-head bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket tee-head bolts are made in standard sizes 1/4" and larger, or to your specifications. In any size, you can depend on a uniform Class 3-fit, if required.

BETTER BOLTS SINCE 1882

## PAWTUCKET

THE BOLT MAN  
MANUFACTURING COMPANY

327 Pine Street Pawtucket, R. I.  
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

When inquiring check CP 7921  
on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

**CHEMICAL PROCESSING.** This lever equipped model is also totally enclosed, permanently lubricated, and furnished with ball bearings throughout.

(Product of Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. . . or for more information check CP 7922 on handy Reader Service slip, pages two and three.)

### Presents installation information for air handling equipment

Sixty-eight-page illustrated manual has the indicated purpose of enabling customer to obtain the utmost in efficient, dependable performance from manufacturer's air conditioning and air handling equipment. Booklet contains helpful hints for installation, initial operation, and maintenance of mechanical draft equipment and heavy industrial fans, standard industrial and air handling fans, ventilating sets, type DF fans, propeller fans, air conditioning units of various types, central system conditioners, unit heaters, and propeller-type heaters.

Engineering drawings, sectional views, and photos are included to aid in description and discussion of various topics dealt with in bulletin. General information is presented about arrangements of drives, direction of rotation and discharge, wheel rotation, bearings, flexible couplings, V-belt drives, and various controls.

Cat 1401 is issued by Clarage Fan Co., Dept. CP, 619 Porter St., Kalamazoo, Mich. When inquiring specify CP 7923 on handy form, pages 2 and 3.

### Luminaire directs 23 per cent of its light toward ceiling to brighten area . . .

will eliminate the severe contrast between bright luminaires and dark ceilings

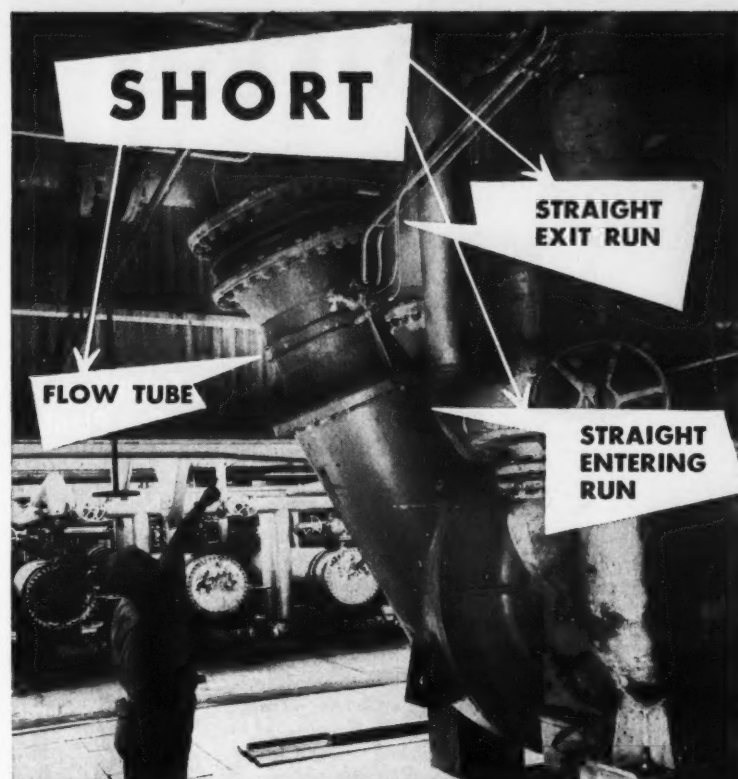
**Uses:** To provide lighting in rooms or factory.

**Features:** Upward component of fixture distributes 23% of its light towards ceiling to eliminate contrast between bright luminaires and dark ceilings. Use of soft colors is intended to improve eye-comfort.

**Description:** Slots located over lamps on each side of reflector on type SDP luminaire is factor which introduces upward component of light. All-white hood is heavily ribbed so that over-all strength is not affected by slots. Porcelain enamel reflecting surface is made in one piece and is easily removed for cleaning.

Luminaire uses two slimline lamps of 38, 58, or 75 w each as well as lead-lag slimline ballast. It has back to back lamp spacing and may be equipped with adjustable slide hangers or a longitudinal shield for 27° shielding.

(Product of Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. . . or for more information check CP 7924 on handy form, pages 2 and 3.)



**F**low Tubes are short. For instance, the 30" Flow Tube shown above is only 30", face to face. And because they need only minimum straight runs entering and following, they can be installed at practically any accessible point where flow conditions are reasonably steady.

This important advantage means easy, convenient, economical installations.

Flow Tubes are manufactured exclusively by Foster Engineering Co. in all pipe sizes for measuring the flow of liquids and wet or dry gases. They can be furnished with or without suitable secondary indicating, recording or totalizing instruments, and, to insure maximum combined accuracy of primary element and receiver, each Flow Tube is furnished with an individual head capacity curve. For unusual piping arrangements, calibration curves for simulated conditions can be furnished.

For further information, ask for Bulletin FT-101; and for specific recommendations, please send us necessary flow data.



PRESSURE REGULATORS • RELIEF AND BACK PRESSURE VALVES • CUSHION CHECK VALVES • FAN ENGINE REGULATORS • PUMP GOVERNORS • TEMPERATURE REGULATORS • FLOAT AND LEVER BALANCED VALVES • NON-RETURN VALVES • VACUUM REGULATORS OR BREAKERS • STRAINERS • SIRENS • SAFETY VALVES • FLOW TUBES

**FOSTER ENGINEERING COMPANY • UNION, N. J.**

When inquiring check CP 7925 on handy form, pgs. 2-3



# OLIVITE

Acid-Handling  
**PUMP**

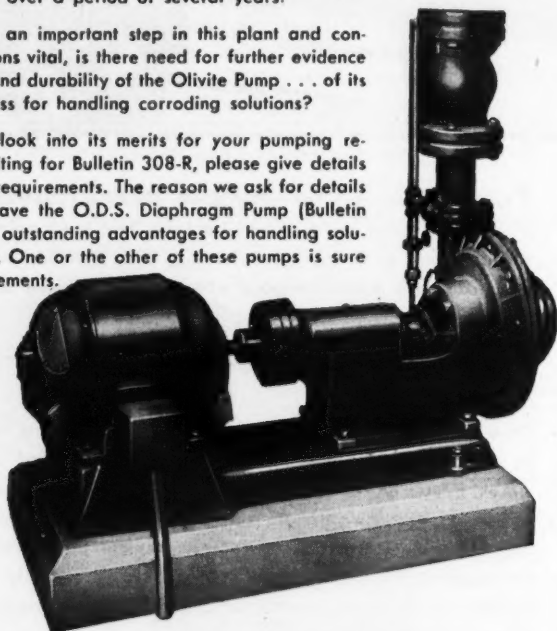
Approved to the Extent  
of Over 100 Pumps in One Plant

**H**ERE, in the east there's a large chemical plant with extensive acid pumping operations. Not only is the total volume handled very large but several different solutions, both hot and cold, are involved.

In this one plant there are over 100 Olivite Acid-Handling Pumps . . . with purchases spread over a period of several years!

Since pumping is an important step in this plant and continuity of operations vital, is there need for further evidence of the efficiency and durability of the Olivite Pump . . . of its practical usefulness for handling corroding solutions?

We suggest you look into its merits for your pumping requirements. In writing for Bulletin 308-R, please give details of your pumping requirements. The reason we ask for details is that we also have the O.D.S. Diaphragm Pump (Bulletin 309-R) which has outstanding advantages for handling solutions and slurries. One or the other of these pumps is sure to fit your requirements.



New York 36 — 33 W. 42nd St. Chicago 1 — 221 N. LaSalle St.

Oakland 1 — 2900 Glascock St. San Francisco 11 — 260 Calif. St.

Export Sales Office — New York • Cable — OLIVUNIT

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## OLIVER UNITED FILTERS



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Dorr-Oliver S.A. Brussels  
Dorr-Oliver S.N.a.R.L. Paris

Dorr g.m.b.h. Wiesbaden (16)  
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SOUTH AFRICA  
E. L. Bateman Pty., Ltd.  
Johannesburg, Transvaal

When inquiring check CP 7926 on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

### Polyvinyl chloride expands its application to threaded pipe fittings . . .

tees, 45 and 90 degree elbows, and couplings are available in 1/4 to 2" sizes

**Uses:** For joining pipe where corrosion is an important factor.

**Features:** Fittings have chemically inert properties of polyvinyl chloride.

**Description:** Threaded IPS pipe fittings are molded of rigid, non-plasticized Bolarton 6200 polyvinyl chloride, which resists organic and inorganic acids, alkalis, alcohols, and similar corrosives. The tees, 45 and 90 degree elbows, and couplings are available in 1/4 to 2" sizes.

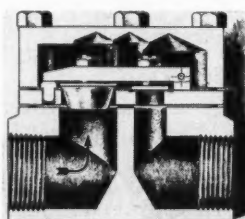
(Products of H. N. Hartwell & Son, Inc., Dept. CP, Park Square Building, Boston, Massachusetts . . . or reader may secure more information about this product by simply checking CP 7927 on convenient Reader Service slip, pages two and three.)

### Even temperature in equipment maintained by high capacity steam trap . . .

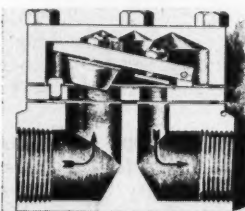
small size and light weight are advantage in close quarter piping

**Uses:** In refineries, chemical plants, and other heavy duty applications. They have been successfully used on heat exchangers, stage heaters, reboilers, reheaters, stills, evaporators, debutanizers, polymerization and gas stabilization units, dryers, and slashers.

**Features:** An important feature of trap is its reported ability to maintain high, even temperature in process equipment. Small size and light weight make it particularly desirable where close quarter piping is involved. For instance, the 1 1/2-inch size measures 5 1/2 by 5 by 2 2/3 inches and it weighs only fourteen and one-half pounds.

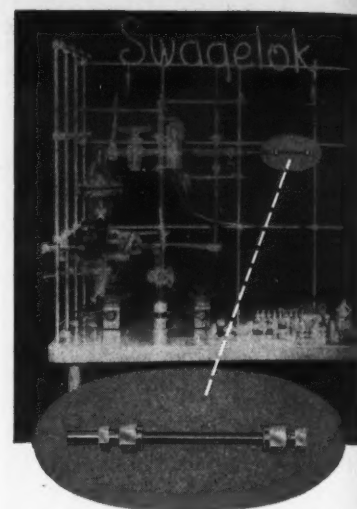


Trap in closed position



Trap in open position

Series 50 employs a hinged lever and two valves mounted on a valve seat plate. Control flow which governs opening and closing action of valves is obtained by allowing small clearance between in-



0.0000000194  
PSIA

STANDARD

Swagelok®

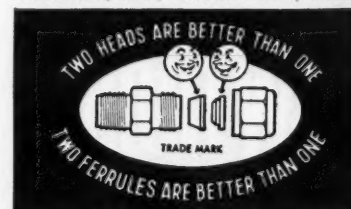
### TUBE FITTINGS HOLD ULTRA-HIGH VACUUMS

Swagelok tube fittings, by providing a vacuum-tight mechanical seal, have now extended ultra-high vacuums beyond the laboratory into industrial applications. The Swagelok Ultra-High Vacuum Demonstrator above incorporates standard Swagelok fittings—a reducer and a cap. It demonstrates that the air pressure in the system can be reduced repeatedly from the normal 14.7 pounds per square inch absolute to 0.0000000194 psia. For information on Swagelok fittings and ultra-high vacuum test data address Dept. 45.

**CRAWFORD FITTING CO.**

884 E. 140th Street, Cleveland 10, Ohio

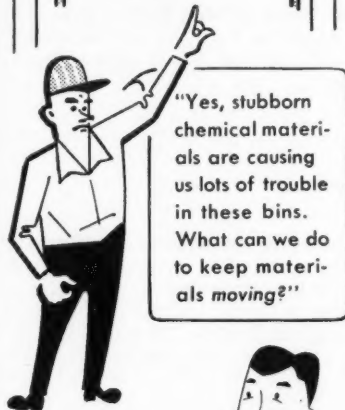
SWAGelok FITTINGS AVAILABLE IN: BRASS, ALUMINUM, STEEL, STAINLESS STEEL, MONEL



COME TO YOU COMPLETELY ASSEMBLED,  
FINGER TIGHT

When inquiring check CP 7928  
on handy form, pgs. 2-3

CHEMICAL PROCESSING



Literature on Request



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 7929 on handy form, pgs. 2-3

let and outlet valves and their respective seats when the lever is at rest.

Sectional illustrations indicate method of operation. When steam is turned on, upward pressure of air and accumulated condensate lifts left-hand (large) inlet valve. This action in turn lifts right-hand (small) outlet valve, permitting full discharge through outlet side of trap. Control flow combines with main flow. Discharge is continuous rather than pulsating. Action is more nearly that of a throttling valve. Unit closes by pressure on upper side of inlet and outlet valves.

Example of the maximum capacity of unit is 17,300 lb of condensate per hour for the 1½" size at 100 lb gage, based on condensate 30°F below steam temperature.

(Developed by Yarnall-Waring Co., Dept. CP, 7700 Norwood Ave., Philadelphia 18, Pa. . . or for more information check CP 7930 on handy Reader Service slip, pages 2 and 3.)

**Installed below water level  
It delivers high gph flow  
at settings over 60' . . .**

entire effort of submersible pump is devoted to raising water through service line

**Uses:** Sump pump will deliver high capacities from wells ranging in water depth from sixty to four hundred feet.

**Features:** Entire effort of submersible pump is concentrated toward raising water through the service line. No suction line is required, and no horsepower is spent in turning shafts, raising lengths of rod, or cycling water through jets. Priming is never required in unit, as all operating elements are under water.

**Description:** Water-cooled, water-lubricated pump is available in seven models which cover depth range from 60 to 400 feet with capacity flows from 210 to 1260 gph. For example, Model S-50 will deliver up to 585 gph at 60 foot depth and 20 psi. Submersible pump functions in minimum well diameters of four inches and is installed simply by adding pipe lengths to the depth of water.

Motor and pump are assembled in tubular frame, which is located below water: motor relay and capacitor are located in control box above ground, where they are easily accessible and can be removed without disturbing main well installation. Use of water lubrication (instead of oil) for the motor is intended to eliminate the need for seals, possibility of motor damage or contamination of water passing through the pumps.

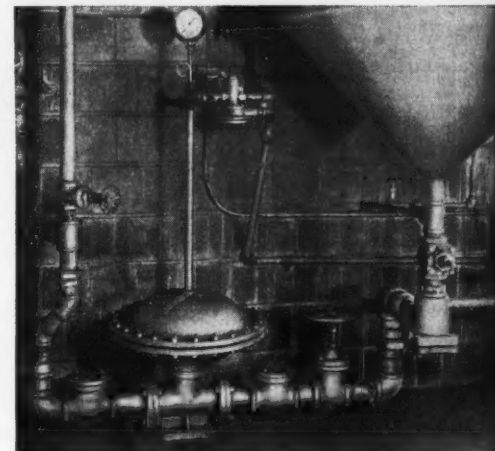
Pump is constructed of corrosion-resistant bronze and stainless steel. Balanced impellers operate on stainless shaft held by high grade bearing sleeves and rotating in sand-resistant rubber bearings.

(Submersible pump is product of Fairbanks, Morse & Co., Dept. CP, 600 S. Michigan Ave., Chicago 5, Illinois . . . or for more information check CP 7931 on convenient Reader Service slip, pages two and three.)

# ODS

## Diaphragm SLURRY PUMP

link-free simplicity . . . a low maintenance feature!



**T**here's nothing novel about a diaphragm being used to transmit a pumping impulse to stream of slurry or liquid. Up to that point the O.D.S. is similar to all other diaphragm slurry pumps.

But where the O.D.S. Pump does differ is in the way the diaphragm gets its impulse. In the O.D.S. this is created pneumatically — *not mechanically*. There is no link connecting the diaphragm with the source of power. There is no hole in the center of the diaphragm because there is no need for it. And further there are no slots or holes around the perimeter of the diaphragm where it is clamped between the cover and casing.

This combination of 'no mechanical link to the diaphragm' and 'no slots or holes in the diaphragm' makes the O.D.S. just about the simplest diaphragm slurry pump you can find anywhere. You can readily appreciate what these two design features mean in the way of low maintenance. Since maintenance is an important factor in pumps, why not get all the details about the O.D.S. Pump? In writing for our Bulletin 309-R, tell us about your pumping problem. You see, we also have the Olivite Centrifugal Chemical Pump. It might be better for your requirement.

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## OLIVER UNITED FILTERS inc.

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Johannesburg, Transvaal

When inquiring check CP 7932 on handy form, pgs. 2-3



# MIX IT better... MIX IT faster... MIX IT with a

## ... the TUMBLING ACTION mixer for intimate blending of dry ingredients

For intimate, accurate mixing of dry ingredients in the shortest time—the Munson Rotary Batch Mixer has proved its value on hundreds of different applications. Will not stratify ingredients—will not alter characteristics of basic components. Its famous 7-way mixing action, plus lower horsepower requirements and low operating costs, make the MUNSON first choice for performance and economy!

**NO OTHER MIXER HAS THIS MULTIPLE-BLENDING ACTION!**

Lifters on inside of truncated cone ends continuously cut out and lift ingredients as drum slowly revolves. Rotating cone tumbles stock toward center. Conveyor flights on mixer shaft also stir and agitate stock back to center of drum—where mixing cycle repeats.



## MUNSON

### Rotary Batch Mixer

**UNEQUALLED FOR DRY MIXING OF:**

Chemicals, Fertilizers, Feeds, Cereals, Gelatin, Glue, Soap Compounds, etc.

Munson Rotary Batch Mixers are available in capacities from 40 to 200 cu. ft. The basic Munson design can be altered to fit your individual requirements—for overhead, working floor or basement installation.

Munson engineers—skilled in processing procedures—will be glad to assist in solving your mixing problem. For full information, write us today...

Other famous MUNSON products: Rotary Knife Cutters, Hammer Mills (25 to 100 HP), Attrition Mills (24" to 30"), Rotary Crushers...

**MUNSON MILL MACHINERY CO. Dept. P-253 Utica, New York**

When inquiring check CP 7933 on handy form, pgs. 2-3

# FOR BETTER WATER FILTRATION

## ...ALOXITE porous underdrains

When you eliminate graded gravel and support your filter media with porous plates—specifically, ALOXITE aluminum oxide underdrains—you automatically derive these benefits:

Since the backwash discharges under the entire bottom surface of the filter media, cleaning can be done quicker, more thoroughly, and with less wash water. There are no mud balls, no upset beds to rebuild, and no chance of losing filter media through the underdrain.

ALOXITE bottoms also reduce the required height of the filter (by nearly the total height of the gravel). Hence, you save on new construction costs. Or, if rebuilding, the added space can be used to increase operating head, to step-up back washing, or for deepening the filter bed.

ALOXITE plates are resistant to practically all acids, and can be used safely up to 900°C. Their uniform grain structure and glass-like bond keep pressure loss to a minimum, permit maximum flow through the filter. They are easy to install, easy to operate, easy to maintain. Hundreds of ALOXITE bottoms are in service today—some in their 15th year.

Use porous plates and tubes by

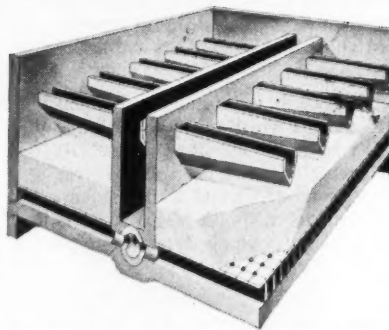
## CARBORUNDUM

Trade Mark

Dept. S-23, Refractories Division

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company

When inquiring check CP 7934 on handy form, pgs. 2-3



Typical false bottom structure showing installation of porous underdrain plates and filter media.

**YOU'LL WANT OUR POPULAR BOOKLET.** It's the up-to-date reference source on porous media. Its 56 pages cover all fields of filtration and diffusion—including information on application, specification, designs, installation and operation. Write for free copy.



## CONSTRUCTION & MAINTENANCE

**Unitized control enables flame to cut ells to any angle**

**Uses:** As precision tool for reworking, reconditioning, and salvaging. It can be used to cut ells to any angle and shorten tees, flanges, reducers, etc.; will re-cut and bevel used ells, tees, swedges, and returns. Flame cutter also finds application in cutting small miters (22½° or less), cutting holes in blanks for slip-on reducing flanges, making swedges out of welding caps and, finally, cutting and beveling short pieces of pipe up to 36" in diameter.

**Features:** It is reported that cuts are sufficiently clean as not to require cleaning or hand fitting.

**Description:** Universal flame cutter has unitized control panel and gas control valve. The table which holds fitting revolves in either direction at speeds varying from zero to five revolutions per minute. Adjustable degree plate enables fitting to be cut at any desired angle.

(Product of Vernon Tool Co., Ltd., Dept. CP, 1101 S. Meridian Ave., Alhambra, Calif. . . or for more information check CP 7935 on handy form, pages 2 and 3.)

**Water isn't required to clean hands**

To meet conditions existing where water is not convenient or available, a waterless hand cleaner has been devised that will remove grease, paint, tar, grime, and inks (litho or stencil). After application to hands, it is reported that white jelly and dirt can be wiped off with a towel to leave hands soft and without tacky feeling.

Cleaner contains Lanolin but no alkali. It is soluble in water and rinsing with water will also clean hands without leaving oily residue. Neutral in its reactions, cleaner will not irritate or dry out skin and has no odor of solvent or ammonia.

(Product of Magnus Chemical Co., Inc., Dept. CP, Garwood, N. J. . . or for more information check CP 7936 on handy Reader Service slip, pages two and three.)

**Portable device maintains humidity in laboratory or stock room**

**Uses:** To maintain proper humidity in laboratory, stock room, and one, two, or three rooms of average size office.

**Features:** Portable humidifier is installed simply by plugging into standard outlet.

**Description:** Table model humidifier vaporizes moisture through centrifugal force at approximately one pint per hour. It uses no steam or heat and draws electric power comparable to a 30 watt bulb. Container and dome of the ten pound unit are made of heavy gage aluminum, finished in baked green enamel. Diameter and overall height dimensions are

16 and 9". It holds a complete day's water supply at one filling and an optional feature affords automatic off-on control.

(Sherwood Table Model Humidifier is product of Abbeon Supply Co., Dept. CP, 179-23 Jamaica Ave., Jamaica 32, N. Y. . . . or for more information check CP 7937 on convenient Reader Service slip, pages two and three.)

**Fatigue and abrasion resistance are added to flexible hose by overlap construction**

Spiral wire reinforced flexible hose features double-overlap construction to contribute increased tensile strength and greater resistance to flexing fatigue and abrasion than models they replace. Types CWL, CWC, and CWY hose are also lighter in weight than types they supplant (CWS, CWM, CWR, and RS). Applications pertain to handling air, gas, or other materials by means of pressure, suction or gravity flow.

(Flexaust Hose is manufactured by American Ventilating Hose Co., Dept. CP, 100 Park Ave., New York, N. Y. . . . or for more information check CP 7938 on convenient Reader Service slip, pages two and three.)

**Hammer handles won't slip in your grip**

Manufacturer of safety hammers and hand drifts has developed a coating for handles to those tools which will prevent them from slipping in the hand of user. Coated surface, which is not adversely affected by grease or sweat, is intended to diminish possibilities of accidents as well as contribute to reduction of fatigue in use of tools.

(Handles coated with Slipruf are products of Cushman Corp., Dept. CP, Larchmont, N. Y. . . . or for more information check CP 7939 on handy form, pages 2 and 3.)

**Totally-enclosed motors feature asbestos-protected windings**

Totally-enclosed, explosion-proof motors are designed to be safe for dangerous, damp and dusty locations. Units feature asbestos-protected windings which withstand high temperatures and guard against carbonization. Each wire is insulated and isolated with asbestos, to protect against burn-outs. According to manufacturer, this feature prevents intrusion of moisture and greatly increases motor life span.

Colorful, illustrated bulletin shows various types of motors and features of each unit. Complete specifications are included in addition to sectional views and drawings which show details of units. Bul F1784 is issued by U. S. Electrical Motors, Inc., Dept. CP, P O Box 2058, Los Angeles 54, Calif. When inquiring specify CP 7940 on handy form, pages 2 and 3.



**Above ground**—Polyken Protective Tape Coatings have a high resistance to aging and are inert to atmospheric attack.

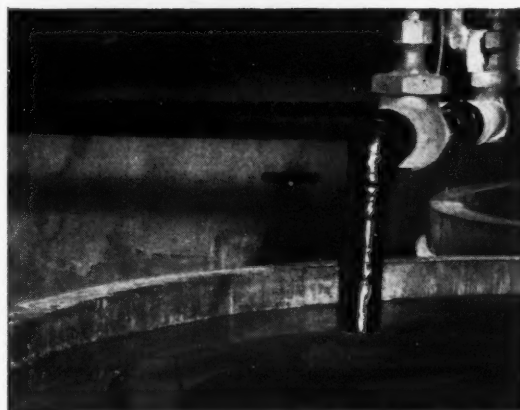


**Under ground**—where protection is needed against electrolytic and chemical attack, Polyken Protective Tape Coatings provide excellent resistance and high dielectric strength. These coatings are resistant to bacterial and fungus attack.

# Field-tested Polyken Protective Coatings

## fight corrosion

• ATMOSPHERIC • CHEMICAL • ELECTROLYTIC



Even direct chemical attack at normal operating temperatures, is resisted by Polyken elastic, calendared polyethylene Tape Coatings.

Above and under the ground, the new Polyken Polyethylene protective Tape Coatings in field tests have successfully combated atmospheric, chemical and electrolytic corrosion on pipe surfaces. This superior protection is so quickly and easily applied that even an inexperienced workman can now wrap pipe uniformly by hand or machine.

The tough 8 mil plastic backing of this Polyken Tape Coating provides all the well-known protective advantages of polyethylene—extremely low moisture vapor transmission rate, high dielectric strength, and excellent resistance to aging, chemicals, bacteria and electrolytic action. To these advantages, Polyken adds the extra protection of a 4 mil adhesive mass—a stable protective barrier in itself—that provides a superior bond to all metal surfaces, a better penetration of surface voids, and an excellent bonding adhesion on overlaps.

This Polyken Protective Tape Coating is available in two colors: No. 900, black and No. 910, aluminum gray.

See how Polyken Protective Tape Coatings can solve your corrosion problems. Test samples and further information are available now.

TAILORED TO YOUR JOB

# Polyken®

## INDUSTRIAL TAPES

Department of Bauer & Black  
Division of The Kendall Company

Polyken, Dept. CPB  
222 West Adams St., Chicago 6, Illinois  
Please send me samples and further information on  
POLYKEN PROTECTIVE TAPE COATINGS.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

When inquiring check CP 7941 on handy form, pgs. 2-3



# DAY PONY MIXERS



Photo Courtesy  
Furst-McNess Co.

**FAST...  
THOROUGH...  
TROUBLE-FREE**



Working can cover  
with feed opening  
optional at  
extra cost.

DAY Gearless Type Pony Mixers are known throughout the industrial world for efficient, dependable operation. Here are the reasons: The one-piece cast head is perfectly counter-balanced for effortless tilting. Planetary mixing action with anti-thrust agitator blades effects a rapid, thorough mix. Absolute rigidity is assured by a one-piece casting for the main frame. A single geared head motor drives both agitator and can gear; single or two-speed motor optional. Stainless steel agitator blades, scrapers and cans available at extra cost. Working capacities from 40 to 125 gallons.

1143-A Harrison Ave., Cincinnati 22, Ohio



**THE J. H. DAY COMPANY, CINCINNATI 22, OHIO**  
INCORPORATED

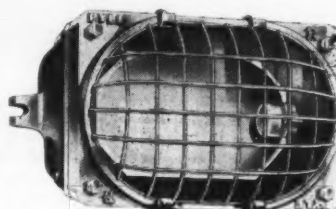
When inquiring check CP 7942 on handy form, pgs. 2-3

## CONSTRUCTION

**Visibility in damp locations  
provided by vapor-proof  
floodlight . . .**

may be mounted recessed or  
on surface

Rectangular vapor-proof floodlight is designed for maintenance pits, underpasses, tunnels, subways, washrooms, and other locations subject to heavy moisture where good, efficient lighting is



Adjustment of floodlight reflector  
can be made 18° upward or  
downward

desired. The Type 1570 Pit and Subway Light can be flush or surface mounted in walls or ceilings. It augments manufacturer's line of heavy duty industrial floodlights and lighting fixtures.

Reflector can be pivoted to adjust angle of beam 18 degrees upward or downward from center. Heat and impact resistant front glass is plain to reduce reflection losses and make cleaning easier. Drainage slots are provided on cover to avoid standing water. Hinged, heavy wire guards are optional.

(Introduced by The Pyle-National Co., Dept. CP, 1334 N. Kostner Ave., Chicago 51, Ill. . . or for more information check CP 7943 on handy form, pages 2 and 3.)

### Bulletin lists causes of molding problems

Twenty-nine-page bulletin dealing with injection molding techniques applicable to molding of styrene includes separate section which lists recognized causes of eight major molding difficulties. Booklet gives special attention to basic considerations of molding equipment, mold construction, and material selection.

Bul 81 is issued by Plastics Div., Monsanto Chemical Co., Dept. CP, Springfield, Mass. When inquiring specify CP 7944 on handy form, pages 2 and 3.

**This tested  
soapless cleanser  
REMOVES  
months'-old  
RUST, DIRT, GREASE  
like magic!**

**ALCONOX**

The accepted fast-acting Cleanser takes off dirt Quickly, Thoroughly, Economically.

No matter what it is, glassware, metalware, silverware, machinery or tools, ALCONOX will make it sparkle. Try it on your toughest job.

**FOR:**

- CHEMICAL EQUIP.
- GLASSWARE
- MACHINERY
- METALWARE
- PORCELAIN
- WALLS, FLOORS

Available in

BOX of 3 lb. . . . .	Price \$ 1.95
CARTON (12 x 3 lb.) . . . ea.	18.00
BAG of 50 lb. . . . .	.40
DRUM of 100 lb. . . . .	.40
BARREL of 300 lb. . . . .	.37

(Slightly higher on Pacific Coast)

*If your dealer cannot supply you, write for literature and samples.*

ALCONOX ALCONOX, INC. ALCONOX

WETTING AGENT 4143 Cincinnati Ave. (Cincinnati, Ohio) 4143

When inquiring check CP 7945 on handy form, pgs. 2-3

## ACE-HIDE



3-GAL. PAIL



1-QUART  
DIPPER

**UNBREAKABLE  
RUBBER-PLASTIC  
3-GAL. PAIL**

For handling corrosive solutions. Tough, resilient, practically indestructible. Made of a new synthetic rubber-base material called ACE-HIDE, unaffected by most acids and alkalis. Drip-proof spout pours easily directed stream. Graduated scale inside pail. ORDER NOW from your rubber goods distributor, or write us.

**ACE rubber and  
plastic products**

**AMERICAN HARD RUBBER COMPANY**

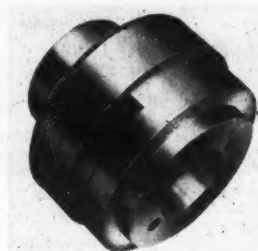
93 Worth St., New York 13, N. Y.

When inquiring check CP 7946 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Strong, flexible coupling 'crawls' into flywheel, saves space**

Modification of manufacturer's Type C coupling is described as one that "crawls into the flywheel".



"Crawls" into flywheel

Requiring little space, it is a standard Type C flexible coupling with one hub, cut off. Three or more holes are tapped in the remaining flange, by which coupling is fastened to center of the flywheel. By this "crawling" into the flywheel itself, coupling saves space normally required by

conventional hub length, also affords a cost saving over standard flywheel couplings in the elimination of the flange, manufacturer reports.

(Development of Lovejoy Flexible Coupling Co., Dept. CP, 5072 W. Lake St., Chicago 44, Ill. . . . or for more information about this product check CP 7947 on convenient Reader Service slip between pages two and three.)

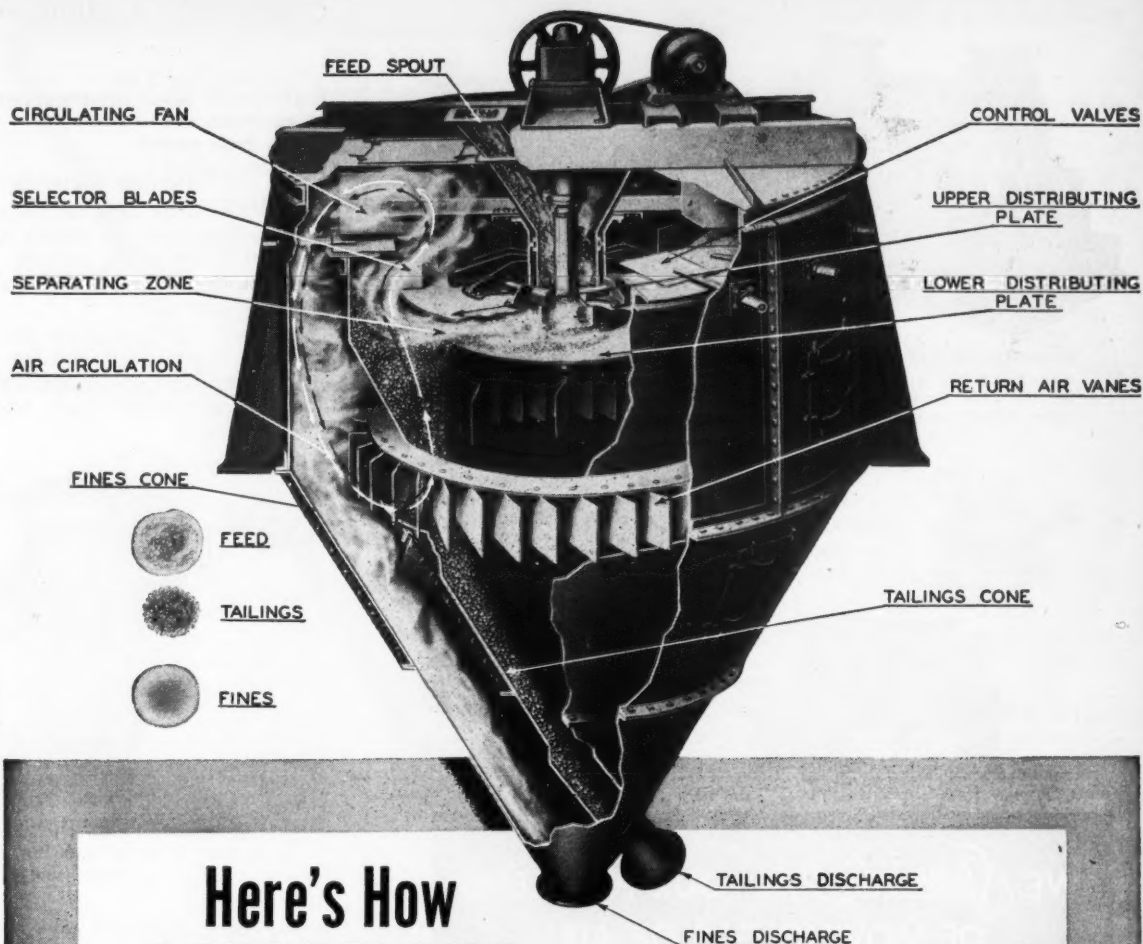
**Integrated boiler-burner units have fully automatic control**

Modulating type automatic controls follow load closely, supplying just the right amount of fuel and combustion air to maintain steam pressure or water temperature when integrated boiler-burner units are used. Safety controls shut down the burner immediately, in the event of low water in the boiler, excessive pressure or temperature, or unsafe combustion.

Boiler portion of unit is completely assembled by manufacturer with all its essential elements, mounted on steel skids, and shipped direct to point of installation. Burner, including all controls, forced draft equipment and oil preheating system, is completely assembled, wired, and tested at the factory. It is reported in publication that units have matching connections which facilitate connection on the job.

Boiler-burner units are available for high pressure steam in outputs ranging from 52 to 456 hp, 125 and 150 lb working pressure; also for low pressure 15 lb steam or 30 lb water, in sizes from 1,313,000 to 10,200,000 Btu. They may be fired with No. 6 or lighter fuel oils, gas (either high pressure or as low as 2 oz), or a combination of both fuels.

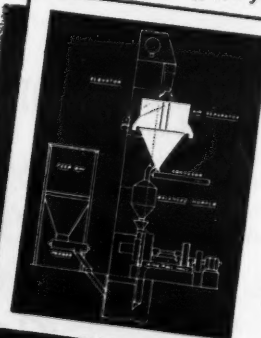
Twelve-page illustrated bulletin describes features and construction of units with the aid of sectional views and photographs. Convenient chart gives ratings, data, and dimensions. Bul 2314 is issued by Kewanee-Ross Corporation, Department CP, Kewanee, Illinois. . . . When inquiring specify CP 7948 on handy Reader Service slip, pages two and three.



## Here's How STURTEVANT Air Separators Increase Production of Fines... Lower Separation Costs

- Sturtevant Air Separators effect production savings by increasing output by 25 to 300% . . . reducing power consumption by as much as 50%.
- They efficiently carry off all classified materials in any desired fineness from 40 to 325 mesh and finer . . . eliminate the need of screening in certain applications.
- Capacities available from 1/4 to 50 tons per hr.

Write for full details, today.



Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

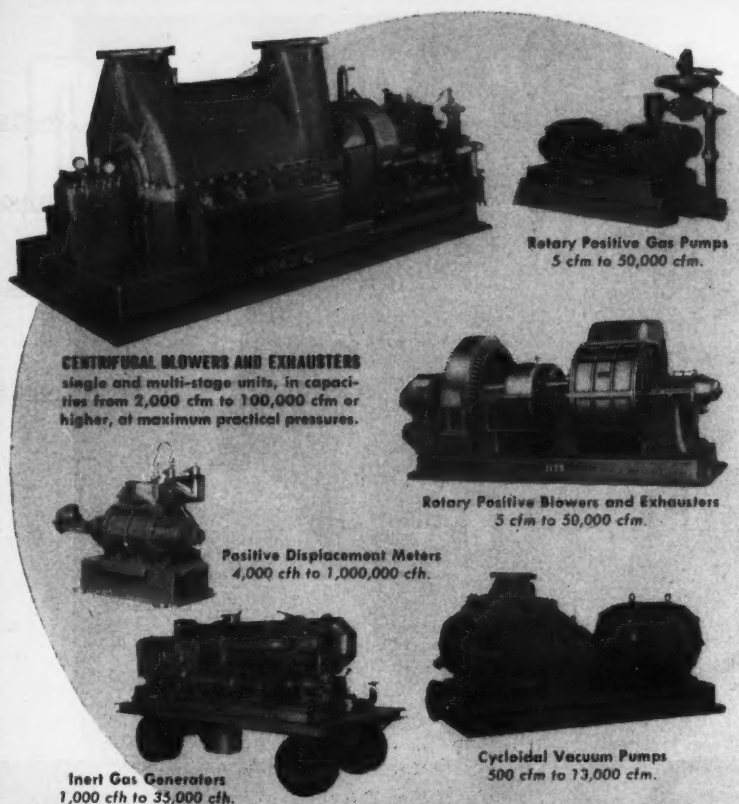
**Sturtevant Mill Company**

119 Clayton Street, Boston 22, Mass.

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 7949 on handy form, pgs. 2-3





**WE *Specialize* IN YOUR PROBLEMS  
OF MOVING GAS OR AIR!**

You may need to move a thimbleful of gas . . . or create a cyclone of whirling air. Whatever your problem, we've probably met something close to it, in experience of almost a century of building such equipment.

Another reason why we know so much about this job is that it's all we do. Our customers range from the "giants of industry" to the neighborhood plant, both of whose production depends upon continuous, reliable, economical performance of air and gas handling units. Because we build the exclusive *dual-ability* line of Rotary Positive and Centrifugal Units, in a wide range of sizes, we offer a *dual choice* which permits completely unbiased recommendations.

So—if you have a problem today—or anticipate one a year or five years from now, we suggest you call upon the facilities of R-C Specialists. Write for bulletins on any specific equipment.

#### **ROOTS-CONNSVILLE BLOWER**

A DIVISION OF DRESSER INDUSTRIES, INC. • 253 Richland Ave. • Connersville, Indiana

**ROOTS-CONNSVILLE**

*Exclusive  
Specialists  
in Handling  
Gas and Air*



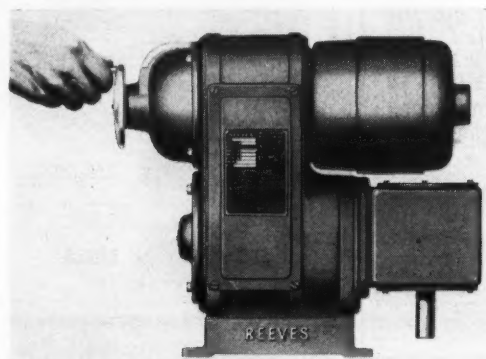
#### **CONSTRUCTION & MAINTENANCE**

##### **Right angle shaft arrangement of variable speed drive saves floor space**

**Uses:** For fractional hp applications.

**Features:** Right angle shaft arrangement can save valuable floor space by making it possible to put drive flat against driven machine. Another way to save space is to mount drive directly above or below driven equipment.

**Description:** Fractional HP Motodrive with Right Angle Reducer is a self-contained unit that is small and compact, yet quite rugged. It combines in one unit a standard NEMA frame, face mounted motor,



Although handwheel control is standard on variable speed drive, it can be easily set-up for remote or automatic controls

speed-varying mechanism, and Right Angle Worm Gear Reducer. Reducer is available in either horizontal or vertical models, with speed ratios from 2:1 through 10:1.

Output shaft drives up, down, or at right angles in horizontal type of units. Shaft drives down or at right angles in vertical model. Reducer is an alloy steel helical worm and bronze gear. It is strongly built to withstand heavy duty and continuous operation. All gearing and bearings are adequately lubricated and case is properly sealed to insure against any oil leakage. Handwheel control is standard on drives but remote and automatic controls can easily be applied.

(Product of Reeves Pulley Co., Dept. CP, 1015 N. Wilson St., Columbus, Ind. . . or for more information check CP 7951 on handy form, pages 2 and 3.)

##### **Mildew discoloration of paint eliminated by fungicide**

Di(phenyl mercury) duodecyl succinate, a paint fungicide which is completely compatible with oil base, alkyd or oleoresinous clear and pigmented coatings, is suggested as an addition to paint formulations to provide mildew resistance. A survey report, made by manufacturer of fungicide, indicates that most house paint discoloration may be attributed to mildew and not dirt.

#### **PARTIAL LIST OF**

### **materials processed**

#### **IN SPROUT-WALDRON UNITS**

##### **HARD & FRIABLE**

ABRASIVES	DRIED GELATIN
AMMONIUM CHLORIDE	GLUE
BAUXITE	SINTERED IRON OXIDE
GLASS	LIME
BETA-NAPHTHYLAMINE	SELENIUM
BEANS	RESINS
CANDY (HARD)	WOOD ROSIN
CHALK	WELDING FLUX
CHARCOAL	HARD RUBBER
COKE	PHONOGRAPH RECORDS

COAL TAR PITCH	PLASTIC SCRAP
CLAM & OYSTER SHELLS	MILL SCALE
COCONUT SHELLS	SALT
CRACKERS	SODIUM NITRATE
DOG BISCUITS	MANGANESE DIOXIDE
EGG SHELLS	TRI CALCIUM PHOSPHATE
FLOOR TILE	GRAPHITIC SCHIST

##### **SOFT & PLIABLE**

CORK	TIRE SCRAP
FRUIT SKINS	GRAINS
PARA-DICHLOROBENZENE	VEGETABLES
SPONGE RUBBER	LINOLEUM
ASPHALT SHINGLES	BENZENE HEXACHLORIDE
NATURAL SPONGES	FILTER PRESS CAKE
WAXES	SPICES
GASKET SCRAP	WHEY
RAISINS	YEAST
SOFT RUBBER PRODUCTS	DDT
PLASTIC SCRAP	

##### **FIBROUS**

ALPHA PULP	KAPOK
ALFALFA	JUTE
ANIMAL GLANDS	LEATHER
ALKALI CELLULOSE	PEAT MOSS
BARK	PALMETTO
BEET PULP	RAG CLIPPINGS
BAGASSE	ROPE & STRING
ASBESTOS	RAMIE
BARBASCO ROOT	TIRE FIBER
COTTON	RUG SCRAPS
FELT	WOOD CHIPS
FLAX	TOBACCO
FIBERBOARD	WASTE YARN
FIBERGLAS	NYLON FIBERS
HEMP	RAYON FIBERS
GLASS WOOL	

##### **SOLIDS & LIQUIDS**

MOLASSES FEEDS
ACETIC ACID—SODIUM ACETATE
STARCH & HYDROCHLORIC ACID
INSECTICIDE BLENDS
POWDERED HAND SOAP FORMULAS
ANILINE SLUDGE—WATER
CEROUS HYDROXIDE—WATER
CLAY—WATER
COTTONSEED MEAL—MOLASSES
FERTILIZER—WATER
MOLYBDIC OXIDE—OIL
VANADIC OXIDE—OIL
PEAT MOSS—MINERAL OIL
SEWAGE SLUDGE—WATER
SUGAR—STARCH—WATER
AMMONIUM CHLORIDE—WATER
TITANIUM DIOXIDE—MOLASSES
SULFUR—PINE TAR
ALUMINUM OXIDE—CATALYST SOLUTION

#### **SPROUT-WALDRON SPECIAL FACILITIES**

- Fabricating
- Machining
- Custom Founding
- Woodworking
- Laboratory Testing

FOR ADDRESS SEE

When inquiring check CP 7950 on handy form, pgs. 2-3

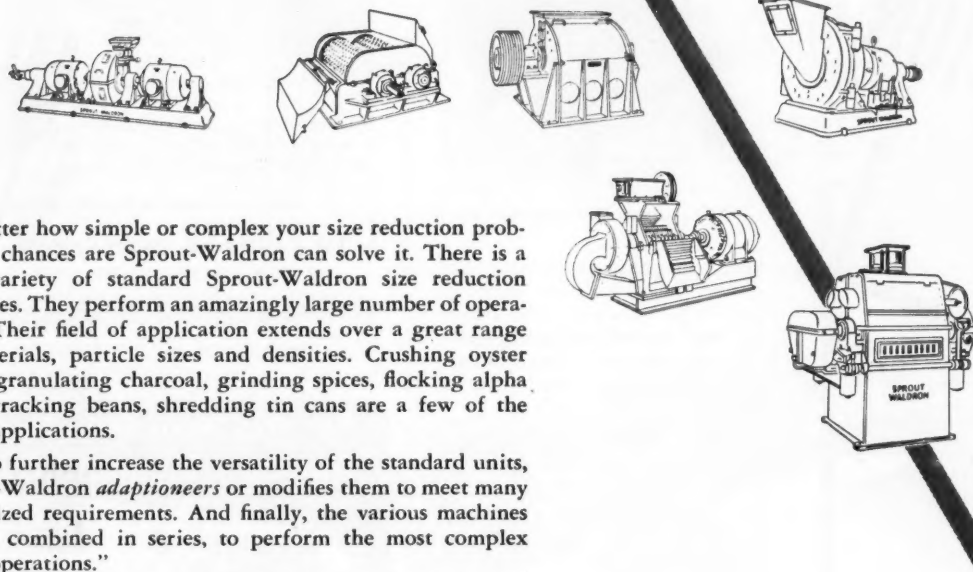
WE MAKE

**molehills**  
OUT OF  
**mountains**

## SPROUT-WALDRON

EQUIPMENT AND SYSTEMS FOR

- GRINDING • CUTTING
- RUBBING • TEARING
- CURLING • HULLING
- CRUSHING
- FLAKING, ETC.



No matter how simple or complex your size reduction problem is, chances are Sprout-Waldron can solve it. There is a wide variety of standard Sprout-Waldron size reduction machines. They perform an amazingly large number of operations. Their field of application extends over a great range of materials, particle sizes and densities. Crushing oyster shells, granulating charcoal, grinding spices, flocking alpha pulp, cracking beans, shredding tin cans are a few of the many applications.

To further increase the versatility of the standard units, Sprout-Waldron *adapioneers* or modifies them to meet many specialized requirements. And finally, the various machines can be combined in series, to perform the most complex "unit operations."

Sprout-Waldron equipment is being used to perform thousands of difficult size reduction jobs in plants in the processing and other industries today. Why not check the list of materials on the adjoining page? If you are processing any of these, or similar, materials, here is what Sprout-Waldron offers you: 1. *Equipment covering a wide scope of processes and applications.* 2. *A broad background of experience in solving many types of processing problems.* 3. *Complete facilities for engineering, pilot testing and fabrication.* Write to Sprout-Waldron & Co., Inc., 10 Logan St., Muncy, Pennsylvania.

# SPROUT-WALDRON

*Manufacturing Engineers*

MUNCY • PENNSYLVANIA

### MODERN EQUIPMENT

for:

- SIZE REDUCTION
- MIXING & BLENDING
- BULK MATERIALS HANDLING
- PRODUCT CLASSIFICATION
- PELLETING & CUBING



## CONSTRUCTION & MAINTENANCE

Sixteen-page bulletin includes survey report on comparison of mildew and dirt discoloration of paint films, discussion of different forms of fungi which cause paint mildew, and description of test procedures which make possible studying and control of fungi. Recommendations for proper paint formulation from standpoint of mildew resistance and characteristics, uses, effectiveness, and advantages of a paint fungicide are presented.

Bul F-5212 is issued by Nuodex Products Co., Dept. CP, Elizabeth F, N. J. When inquiring specify CP 7953 on handy Reader Service slip, pages two and three.

### Resistance to vibration is characteristic of multiple switch assembly . . .

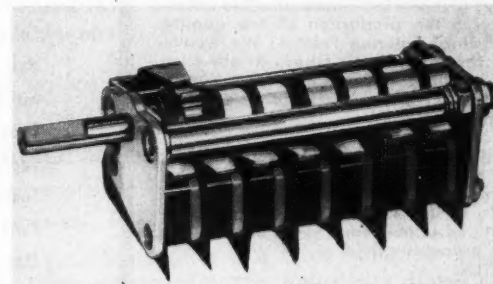
cam combinations can be used to give any desired sequence of circuit control

**Uses:** For either AC or DC switching applications in control of lighting as well as X-ray or electronic equipment.

**Features:** Initially used as aircraft cockpit lighting control of multiple circuits, 7AS71 assembly is reported to have exceptional resistance to vibration.

**Description:** Entire multiple rotary switch assembly measures  $1\frac{1}{2} \times 1\frac{3}{8} \times 4\frac{3}{4}$  inches and may contain from three to eight gang assemblies of manufacturer's V3 type single-pole double-throw basic switches. Pivoted cam followers accurately maintain circuit adjustment and detent mechanism provides positive feel of each position.

Assembly's DC rating for inductive and heater load is 30 v, 10 amp at sea level and 30 v, 6 amp at 50,000 feet altitude. AC rating for this load is 125 or

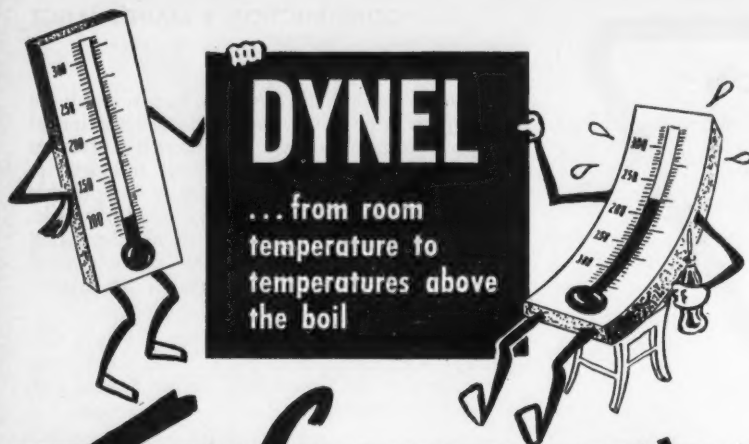


Seven V3 type basic switches make up this assembly which measures  $1\frac{1}{2} \times 1\frac{3}{8} \times 4\frac{3}{4}$  inches

250 v, 10 amp. Current ratings are based on maximum permissible temperature rise of 65°C. Inductive load ratings were determined by using AN3179 inductors. Assembly is available with two to eight switching positions at 45° angular rotation between positions.

(Assemblies are manufactured by Micro Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Freeport, Ill. . . . or for more information check CP 7954 on handy form, pages 2 and 3.)





# Tops for broad-range CHEMICAL FILTRATION

Dynel is an excellent general purpose filter cloth. It is available in twill, chain and plain weaves. Dynel can be woven in widths from 26" to 72" and can be supplied as made up filter element covers. In addition to its high degree of resistance to many chemicals (see box at right) Dynel is not affected by mildew or other fungi and has outstanding dimensional stability.

Over forty years of weaving experience have given us the "know how" so necessary to the production of top quality Industrial Filtering Fabrics. We weave all these synthetic fibers in our own plant: Glass, Nylon, Vinyon N\*, Saran, Vincel\*\*, Orlon† acrylic fiber, and Dynel.

Write us about your requirements. We'll be glad to send you test samples and to give you the benefit, without obligation, of the knowledge we have accumulated in our many years of servicing the processing field.

\*TM—UCC  
\*TM—NFM (applied for)  
†TM—E. I. du Pont de Nemours



General Offices & Mills: New Haven 14, Conn.  
Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

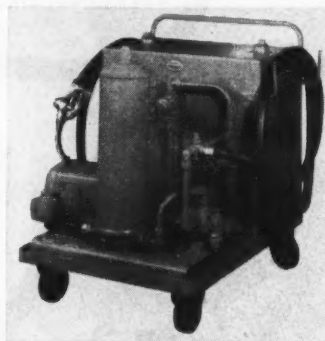
Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway Johannesburg, South Africa  
2627 West 19th St. Roselawn Center Bldg. 1406 Second National Bank Bldg. Nicolai Friis Edward L. Bateman

When inquiring check CP 7955 on handy form, pgs. 2-3

## CONSTRUCTION

### Hydraulic oil filtration is facilitated by portable unit

Hydraulic oil can be conveniently filtered with portable unit designed for pumping oil from a machine, through the filter and back to machine or to storage tanks.



Circulates and filters hydraulic oil

Equipment includes portable tank divided into two sections of 55 gal and 20 gal capacities. Other parts are hose assemblies, filter, pump, one-half horsepower motor, fittings, tubing, drip-proof nozzle, valves, and 3-way cock.

(Portable Hydraulic Filter Units are designed and built by J. N. Fauver Co., Inc., Dept. CP, 49 W. Hancock St., Detroit 1, Mich. . . or for more information check CP 7956 on handy form, between pages 2 and 3.)

### Self-cleaning strainers described in bulletin

Self-cleaning strainers, constructed in sizes from 2 to 36" for use in various automatic cleaning operations, are described in 12-page illustrated bulletin. Units are useful in cleaning service water, sea water, ammoniacal liquors, gasoline, oil, and other liquids.

Descriptions, illustrations, diagrams, and pertinent engineering data are included in comprehensive bulletin. Numerous advantages of units are also outlined.

"Self-Cleaning Strainers" is issued by S. P. Kinney Engineers, Inc., Dept. CP, Carnegie, Pa. When inquiring specify CP 7957 on handy form, pages 2 and 3.

Production Goes Up

## When you order Stanzails®

by PIONEER

Proper protection and comfortable fit go hand in glove with Stanzails to boost your workers' efficiency and send your company's profits soaring! Work stoppage and injury claims decrease . . . medical expenses decline . . . employee relations improve and production increases—when you order the right liquid tight acid and oil resistant neoprene Stanzail gloves for each job. Choice of 32 longer-lasting styles, weights, sizes, colors . . . write for PIONEER Stanzail catalog today.

Industrial Products Division  
The PIONEER Rubber Company  
241 TIFFIN ROAD • WILLARD, OHIO

Quality Gloves for 35 Years

Costs Come Down

N-32 medium weight straight finger style neoprene glove. Non-slip grip surface. 10½" length.

When inquiring check CP 7958 on handy form, pgs. 2-3

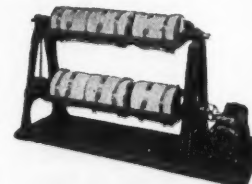
## For ALL Your Grinding • Mixing • Blending Operations

### ABBÉ ENGINEERING MILLS

● Low Over-all Operating Costs because of efficient design, sturdy construction based on long years of experience in your kind of grinding.

● Any Materials . . . colors, pigments, paints, printing inks, coatings, metals, minerals, chemicals, plastics, drugs, cosmetics, foods, etc.

● Capacity as you need it . . . from one quart jar mills to 3000 gallon and larger pebble or ball mills.



Abbé Jar Mills, Jar Rolling Machines and Ball and Pebble Mills are thoroughly covered in individual catalogs. Write for copies.

ABBÉ ENGINEERING CO. 46 CHURCH STREET  
NEW YORK 7, N. Y.  
Makers of  
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 7959 on handy form, pgs. 2-3

**Intercommunications system has power supply to accommodate 12 to 40 stations . . .**

control feature eliminates necessity of making any adjustments while dictating

Baseboard-mounted power supply provides 20 watt Redi-Power intercommunications system with twice the maximum output of previous model. This self-compensating unit delivers the required power to all or a select group of stations, supplying ample output for each station when called simultaneously as well as individually. It also eliminates the need for a separate booster or paging system.

Twelve, twenty, thirty, or forty stations can be housed in the same cabinet with only twelve push-buttons, and the system may be expanded or changed to handle new requirements without discarding original equipment. Unit is equipped with control for conferences. It is not necessary to operate any controls while dictating.

(Redi-Power Talk-A-Phone is product of Talk-A-Phone, Dept. CP, 1512 S. Pulaski Rd., Chicago, Ill. . . . or for more information check CP 7960 on handy form, pages two and three.)

**Wood preservative has no toxic agent**

A synthetic resin sealer which is non-toxic has been incorporated into manufacturer's wood preservative used to control swelling and checking in raw lumber. The sealer in Checkmate is intended to stop skin irritations on hands and face which occasionally result from use of wood preservatives containing toxic agents.

(Product of The Wilbur & Williams, Co., Dept. CP, 130 Lincoln St., Boston (Brighton) 35, Mass. . . . or for more information check CP 7961 on handy form, pages 2 and 3.)

**Presents useful information on high vacuum apparatus**

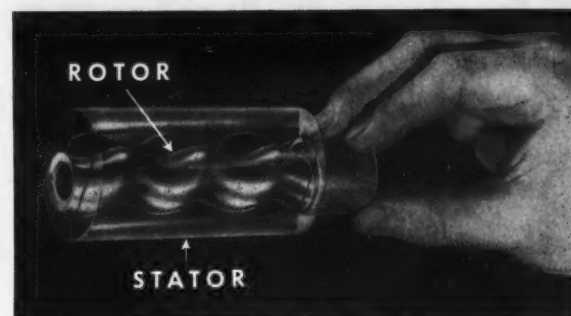
Fifty-six-page illustrated bulletin contains comprehensive information on specifications and features of high vacuum apparatus and accessories. Detailed description is given for planning of a high vacuum system, and many valuable charts and tables are included.

Topics discussed in bulletin include: vacuum pumps, vacuum accessories, low pressure technique, and vacuum system planning. Types of vacuum pumps described include: mechanical pumps, organic liquid diffusion pumps, and high vacuum pump outfits. Accessories discussed include freezing traps, vacuum and pressure gages, and cements and waxes.

Bul 10E is issued by Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. When inquiring specify CP 7961A on handy form, pages 2 and 3.

# HOW IT WORKS

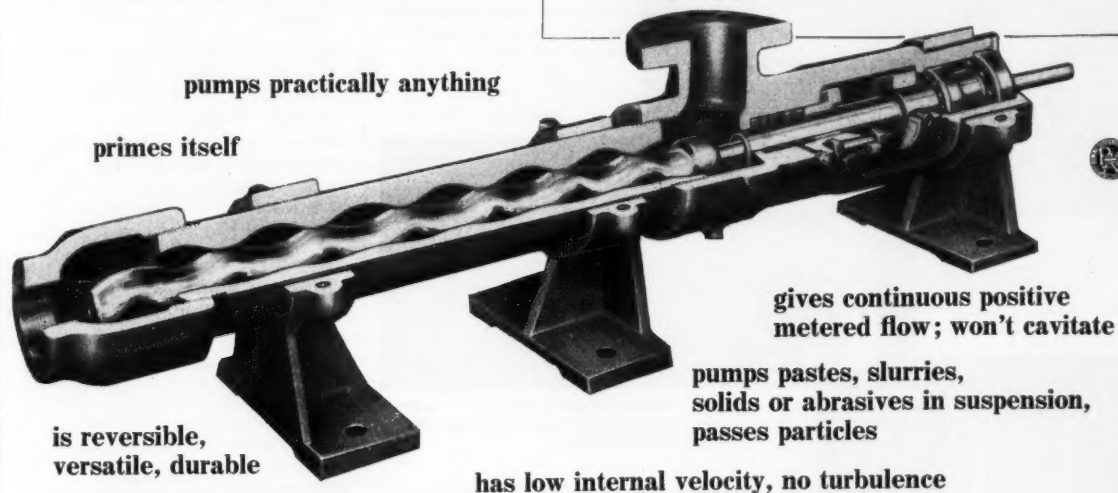
shows why  
the MOYNO has all  
these Advantages:



**Rotor and Stator Form the Progressing Cavities**

Rotor might be described as a stretched-out cork-screw. The stator is like it but has a *double* internal thread. As shown in the illustration, the rotor and stator thus form closely fitted cavities. As the rotor revolves, the material constantly moves or progresses within these cavities toward the discharge end.

Thus material is moved quietly and steadily, with a minimum of turbulence. And because of these cavities, the material may be a paste; it may contain solids in suspension; abrasive slurries are no problem. That is why Moyno pumps can move practically anything that will pass through a pipe.



pumps practically anything

primes itself

is reversible,  
versatile, durable

has low internal velocity, no turbulence

gives continuous positive  
metered flow; won't cavitate

pumps pastes, slurries,  
solids or abrasives in suspension,  
passes particles

Moynos solve many pumping problems. They will handle acids and alkalis, hot or cold materials, liquefied gases. They'll handle practically anything you can think of as pumpable, and handle difficult jobs better than any pump we know.

Moynos are available in a wide variety of types and sizes and materials, with displacements up to 250 gallons per minute, pressures up to 1000 p.s.i. And you'll be amazed at their small sizes,

their high efficiency, their long, trouble-free operation.

**Get this free bulletin No. 30B**

Details, specifications, and a more complete explanation of how Moyno pumps work and what they can handle. Call the nearest R&M Moyno man, or write Robbins & Myers for a copy.



**ROBBINS & MYERS, INC.**

SPRINGFIELD 100, OHIO • BRANTFORD, ONTARIO

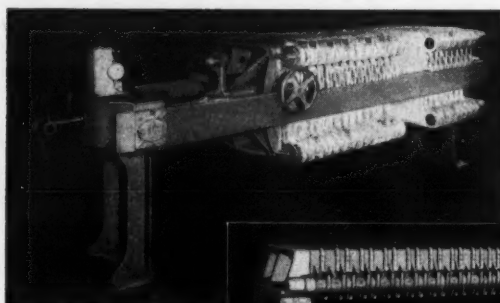
When inquiring check CP 7962 on handy form, pgs. 2-3



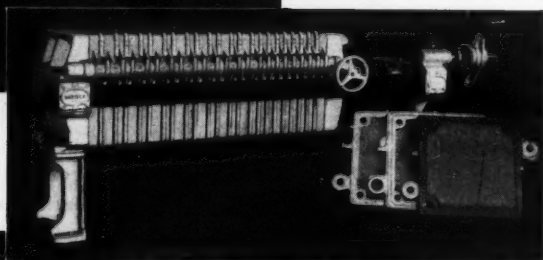
# Shriver brings you More Economical Filtration with the type of filter press that best serves your needs

Each has definite features that prove it better for

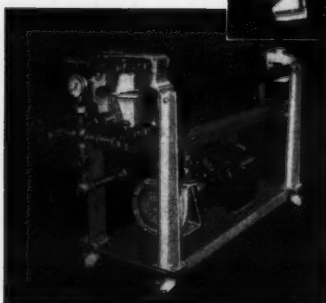
- Solids Recovery • Clarification
- Cake Washing • Extraction
- Operation at any pressure and temperature



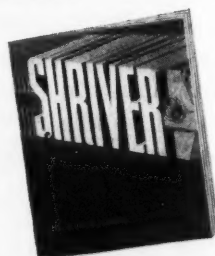
Stainless steel, double side feed and discharge filter press for precoating and clarification at high rate.



Steam heated, corner feed filter press, designed for washing cake after filtration.



Monel metal filter press, closed feed and discharge, washing and extraction type; equipped with feed pump on portable stand.



Learn how Shriver Filter Presses—the most versatile in design, capacity and performance—the most extensively used of all pressure filters—can do the job better for you at lower cost. Write for this Catalog 52.

## Shriver Filter Presses

T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.

When inquiring check CP 7963 on handy form, pgs. 2-3

## CONSTRUCTION

**Bantam-sized relay weighs only about two ounces . . .**

approx 2 x 1 x 1 1/2" is size of hermetically sealed unit

**Uses:** In addition to confined space locations, the miniature relay is designed for use wherever extremes of shock, temperature, and vibration are factors contingent to efficient operation.

**Features:** Hermetically sealed enclosure contains entire unit, measuring 2 1/32 x 31/32 x 1 1/2 inches and weighing 17/8 ounces.

**Description:** Class "S" relays are designed for minimum inductance and maximum make-and-break speeds. Tamper-proof units are protected from deteriorating effects of atmosphere and they qualify for all provisions of MIL-R-6106. Mounting studs may be arranged on base or narrow side of housing.

(Class "S" Relays are products of Automatic Electric Sales Corp., Dept. CP, 1033 W. Van Buren St., Chicago 7, Ill. . . . or for more information about this development check CP 7964 on handy form, pages 2 and 3.)

**Slippery hands won't deter adjustment of valves . . .**

projections on handwheel enable operator to get firm grip

Investigations into the amount of hand pressure required to turn valve handwheels has resulted in a design that will enable operators to close valves tightly and eliminate leakage.

The iron handwheel has four projections extending from the stem hub and beyond the octagonal shaped frame. This permits operator to get a firm grip on handwheel and apply pressure, although his hand may be wet or greasy. Handwheel is constructed so that operator cannot burn his hands by contacting the valve stem.

Manufacturer has added this patented feature to his line of bronze and iron valves.

(Non-Slip Handwheel is product of The Lunkenheimer Co., Dept. CP, Beekman St. & Waverly Ave., Cincinnati 14, Ohio . . . or for more information check CP 7965 on handy form, pages 2 and 3.)

## BLAW-KNOX STEEL GRATING in the Front Rank of Industry ON ALL 5 COUNTS

**OPEN SPACE • STRENGTH  
LONG LIFE • CLEANNESS  
SAFETY**

Blaw-Knox Steel Grating is electroforged into rigid, one-piece panels, using twisted cross bars for firm footing. Bring your open steel flooring problems to Blaw-Knox for expert help. Bulletin 2365 sent on request.

Grating Department  
BLAW-KNOX EQUIPMENT  
DIVISION  
BLAW-KNOX COMPANY  
2076 Farmers Bank Bldg.  
Pittsburgh 22, Pa.

## BLAW-KNOX Electroforged STEEL GRATING

When inquiring check CP 7966 on handy form, pgs. 2-3

**1. SET IT ON YOUR  
CONCRETE FLOOR**

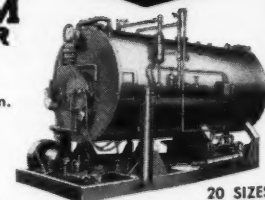
**2. MAKE SERVICE  
CONNECTIONS**

**3. TURN ON  
THE STEAM!**

**You Never  
Saw a  
UNIT  
So Easy  
to  
INSTALL  
and  
OPERATE!**

### AMESTEAM GENERATOR

- is fully piped and wired.
- needs no special foundation.
- is factory insulated and jacketed.
- has its own refractories.
- needs no heavy, costly stack.



20 SIZES  
10 to 600 h.p.  
15 to 200# OIL OR GAS

**WRITE FOR FREE BULLETIN TODAY!**

**AMES  
IRON WORKS**  
BOX B-23  
OSWEGO, N. Y.

AMES IRON WORKS  
Box B-23, OSWEGO, N. Y.  
Gentlemen:  
Please send me further information on  
AMESTEAM GENERATORS and name of the  
nearest representative.  
NAME.....  
COMPANY.....  
ADDRESS.....

When inquiring check CP 7967 on handy form, pgs. 2-3

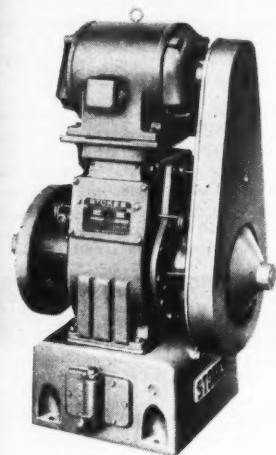
CHEMICAL PROCESSING

**Improvements in vacuum pump minimize maintenance . . .**

unit which has no stuffing boxes and no valves, requires no adjustments

**Uses:** Design of pump permits use in an exceptionally broad range of applications, including rapid cycling evacuation of large-volume systems. Other uses include high vacuum evaporation of metals and metallic salts and high vacuum sealing of containers.

**Features:** Improvements incorporated in pump include a modern type of shaft seal installed to minimize maintenance. Stuffing boxes and valves are eliminated on unit. No adjustments are required. Lubrication is completely automatic and freedom from leakage is guaranteed.



Lubrication is automatic in improved vacuum pump

against entering solids. Additional protection is afforded by a screen filter.

Every part of pump is easily accessible to facilitate cleaning. Oil filter in the line to shaft seal gives special protection to bearings at these points. Solenoid valve in the oil supply line automatically prevents oil-flooding of pump and vacuum pump in the event of power failure.

(Manufactured by F. J. Stokes Machine Co., Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. . . or for more information check CP 7968 on handy form, pages 2 and 3.)

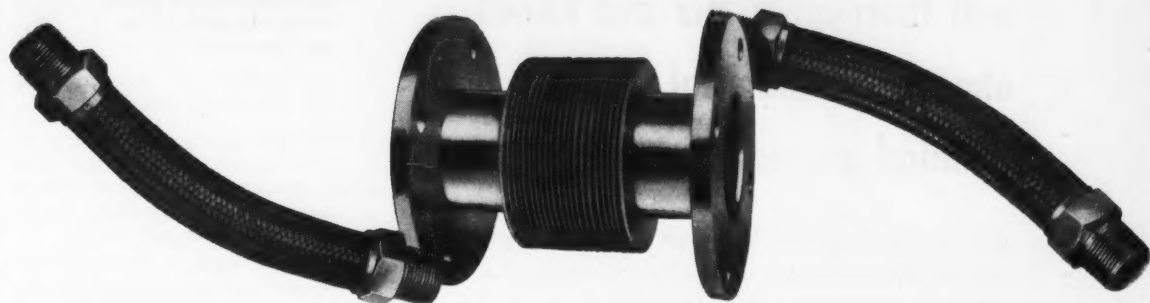
**Coating protects insulation from abrasion, vibration**

Trowelled on as a plastic, fire-retardant coating sheds water, strongly resists abrasion, and protects insulation against vibration. Protective coating seals insulation against air infiltration, fumes, rain, sleet, or snow; and withstands severe service on both indoor and outdoor applications.

Four-page illustrated bulletin discusses features, applications, performance of protective coating.

Bulletin A-165 is issued by the Eagle-Picher Co., Dept. CP, American Bldg., Cincinnati 1, Ohio. When inquiring specify CP 7969 on handy form, pages 2 and 3.

# Are these 3 new to you?

**It would pay you to know all about them**

**Don't let their modest appearance fool you; these are puzzle-busters and job-simplifiers extraordinary.**

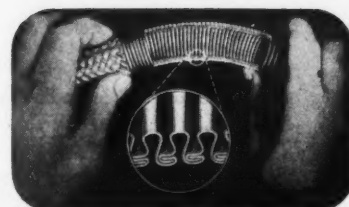
This is **TITEFLEX®**—the All-Metal Flexible Hose with 1001 industrial applications. It withstands temperatures, pressures, vacuum, vibration and the corrosive action of a host of liquids and gases. How can you use it? To connect moving parts of machinery. To connect misaligned parts. To absorb vibration, contraction, expansion and pulsation. To "transmit" vacuums or convey high-frequency currents. To shield wire and cables. And to handle difficult materials—from acid and ammonia to sea water or steam.

Here's **UNIFLEX**—the new *Helically-corrugated Seamless Flexible Tube*. It's tough, corrosion-resistant, leak-proof. And its *helical* construction gives it greater flexibility and longer life in applications too critical for ordinary concentric tubing. UNIFLEX is for you—if you're concerned with hydraulic lines, oil burners, refrigeration machinery, air conditioning equipment, pumps, compressors, diesels or machine tools. For leakless service, UNIFLEX fittings have metal-to-metal seat. Seal is produced through spring washer effect of hose on fitting body.

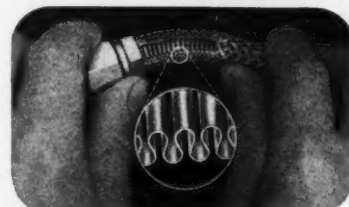
**TITEFLEX BELLOWS** are the *efficient* means of absorbing lineal movement in many types of equipment. Their welded, convoluted-diaphragm construction lets them do this without weakening the lines in which they are inserted and without reducing the flow rates of gases or liquids being conveyed. You can use TITEFLEX BELLOWS to seal high pressure valves and shafts, accommodate lineal contraction and expansion or high frequency vibration, and to handle gases and corrosive liquids under high temperature conditions. Special designs are available and complete bellows assemblies can be furnished with any required types of fittings.

**Get the facts without obligation**

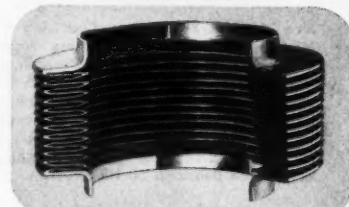
TITEFLEX literature contains full descriptions, technical data and suggestions for use. And Titeflex Designers and Engineers have a thorough knowledge of these products' behavior under exacting service conditions. Check the products that interest you and mail the coupon today. We'll be glad to help you with any specific problem.



Sectional view shows rugged, flexible, seamed construction of Titeflex.



Note the helically-corrugated, seamless wall structure of Uniflex.



Cross-section shows the welded, convoluted-diaphragm construction of Titeflex Bellows.

## Let Our Family of Products Help Yours

✓ Check products you are interested in.



☐ SEAMED AND SEAMLESS METAL HOSE



☐ PRECISION BELLOWS



☐ IGNITION HARNESS



☐ IGNITION SHIELDING



☐ ELECTRICAL CONNECTORS



☐ RIGID AND FLEXIBLE WAVE GUIDES



☐ FILTERS



☐ FUSES

# Titeflex

TITEFLEX, INC.  
509 Frelinghuysen Ave.  
Newark 5, N.J.

Please send me without cost information about the products checked at the left.

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

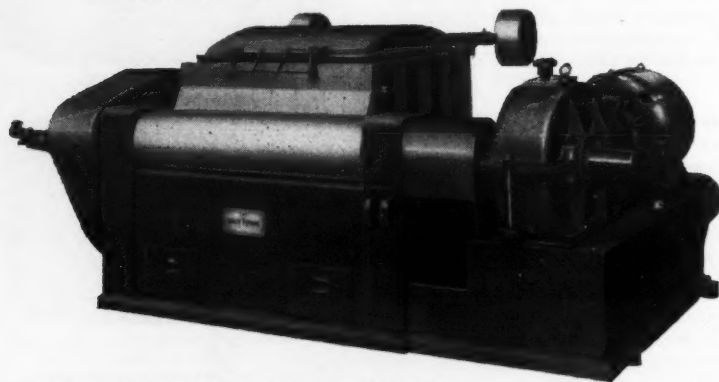


When inquiring check CP 7970 on handy form, pgs. 2-3



# BAKER PERKINS mixers will thoroughly mix and knead almost any material for the chemical processing industry

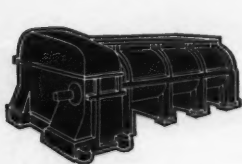
There is a BAKER PERKINS Mixer built to efficiently mix and knead materials ranging in consistency from dry powders and light fluids to stiff plastic masses. Close clearance between the blades and trough keeps every particle of the material in constant motion so that no part of the batch escapes the thorough mixing action of the blades. Intensive kneading is maintained as the material is pulled and squeezed against the blades, saddle and sidewalls. Consult a B-P sales engineer for full facts.



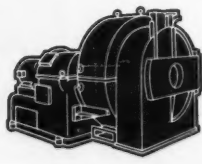
Size 16, NEM B-P "Universal" Mixing and Kneading Machine for heavy plastic masses. Working capacity 150 gallons; total capacity 225 gallons. Fabricated steel trough shell jacketed for 150 psi. steam or water pressure. Cast iron trough ends are not jacketed. Saddle section has thermocouple for temperature control. Cast steel Sigma or Double Naben blades cored for circulating steam or water. Oil tight gear guards; anti-friction bearings. 50 HP motor.

242-A

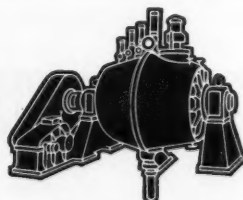
## Other BAKER PERKINS products



EQUIPMENT FOR FOUNDRY  
INDUSTRY



CENTRIFUGALS



EQUIPMENT FOR RAYON  
PRODUCTION

**BAKER PERKINS INC.**  
CHEMICAL MACHINERY DIVISION • SAGINAW, MICHIGAN

When inquiring check CP 7971 on handy form, pgs. 2-3

## CONSTRUCTION

**Retards rust on parts  
being cleaned after  
wet blasting . . .**

inhibitor is organic liquid,  
contains no chromates

Material known as Anarust is reported to be a very effective agent in retarding rust on cast iron or steel parts which are being cleaned or washed after wet blasting.

Inhibitor, which is of organic composition and contains no chromates, can also be safely used on parts prior to undergoing such operations as plating, enameling, and painting surfaces.

Liquid is completely soluble in hard or soft water at 20°C. It produces a clear solution which is colorless, odorless, non-irritating to the skin, and not subject to bacterial decomposition. It does not foam when put into solution and keeps water staining to a minimum on ferrous parts rinsed.

Specific gravity is approx 1.0 at 20°C. Recommended quantity for use is 1/2 ounce per gallon of water. Inhibitor is available in five-gallon can size.

(Product of American Wheelabrator & Equipment Corp., Dept. CP, 1036 S. Byrkit St., Mishawaka, Ind. . . or for more information check CP 7972 on handy form, pages 2 and 3.)

## Presents picture tour of fabrication plant

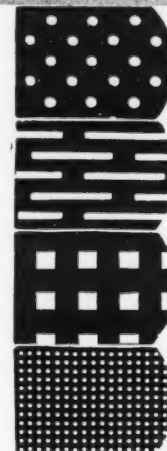
Four-page bulletin shows details of fabrication and lining facilities of manufacturer of tanks, linings, ducts, pipe, and heating units. Booklet describes wide range of acid-proof lining materials which are applied by manufacturer — including rubber, Neoprene-type rubber, Koroseal, Saran rubber, Heilex 445 (plastic), lead, ceramic brick, structural plastics and alloy fabrications.

Chart of standard designs for heating and cooling units, including both external and immersion units, is given in bulletin. Bul 460 is issued by Heil Process Equipment Corp., Dept. CP, 12901 Elmwood Ave., Cleveland, Ohio. When inquiring specify CP 7973 on handy Reader Service slip between pages 2 and 3.

*Perforated*  
**STAINLESS  
STEEL**

A Specialty —  
Not a Problem  
with **H & K**

**STRONG • EASILY CLEANED  
DEPENDABLY ACCURATE**



PERFORATING STAINLESS STEEL, regardless of alloy content, has long been a specialty at H & K; in fact, meeting stringent specifications for heat, corrosion, acid and alkali resistance through the years has actually made this operation a science! Stainless Steel is one of the most difficult perforating assignments — yet, H & K will satisfy your requirements with skilled accuracy and master craftsmanship.

H & K Perforated Metals are produced to your specifications in practically any sheet, coil or plate material. Whether it's Stainless or any other metal—or a non-metal such as plastics, rubber, plywood, etc. — you can be sure the job is right. Send at once for full information on your problem — recommendations and prices.

Also Remember—H & K  
Grilles . . . Ultimate in  
Beauty . . . Utility . . .  
LONG LIFE!

**The Harrington & King**  
PERFORATING CO.

5636 FILLMORE ST., CHICAGO 44, ILL.  
114 LIBERTY ST., NEW YORK 6, N. Y.

When inquiring check CP 7974 on handy form, pgs. 2-3



Corrosion-Resisting  
**INCO-CAST FITTINGS**  
Write for catalog price list!



90° Elbows

Protect product purity	Unions	Available in Monel®, Nickel and Inconel®	Tees
Crosses	All standard types Pressure tested	Plugs	Full range of sizes Economical in cost
Withstand high and sub-zero temperatures	Stub ends	Strong, sound, tough castings	Flanges
Reducing tees	Yours for the asking—Catalog Price List  The International Nickel Company, Inc. 67 Wall Street New York 5, N. Y.		

When inquiring check CP 7975 on handy form, pgs. 2-3

**Condensate delivered at 190-205°F  
from compact steam trap**

**Uses:** For draining steam coils and radiators used for space heating, although steam trap is not suitable on unit heaters (fan type) or process equipment.

**Features:** Delivers condensate at temperatures between 190 and 205°F when return line pressure is zero. Trap also eliminates flash steam (with atmospheric return).

**Description:** The O.B.T. steam trap is designed for use on steam radiators and gravity air convectors where maximum pressures do not exceed 100 psi. Manufacturer claims longer life for trap since bellows are not exposed to pressures higher than return line pressure. Bellows do not open and close valve in cycles. For a given condensate rate, bellows are held stationary in partly-opened position, thus eliminating practically all failure normally due to flexing of bellows. Unit can be readily checked without removing from line when return line pressures are at atmosphere or less.

(Development of Coe Manufacturing Co., Dept. CP, Painesville, Ohio . . . or for more information check CP 7976 on handy Reader Service slip, pages two and three.)

**Service organization promotes  
lumber and wood products**

Research organization devoted to activities in fields of wood chemistry and product development presents comprehensive picture of its facilities and services in 32-page illustrated booklet. Detailed information is presented in easy-to-read style regarding activities in fields of general research and product development.

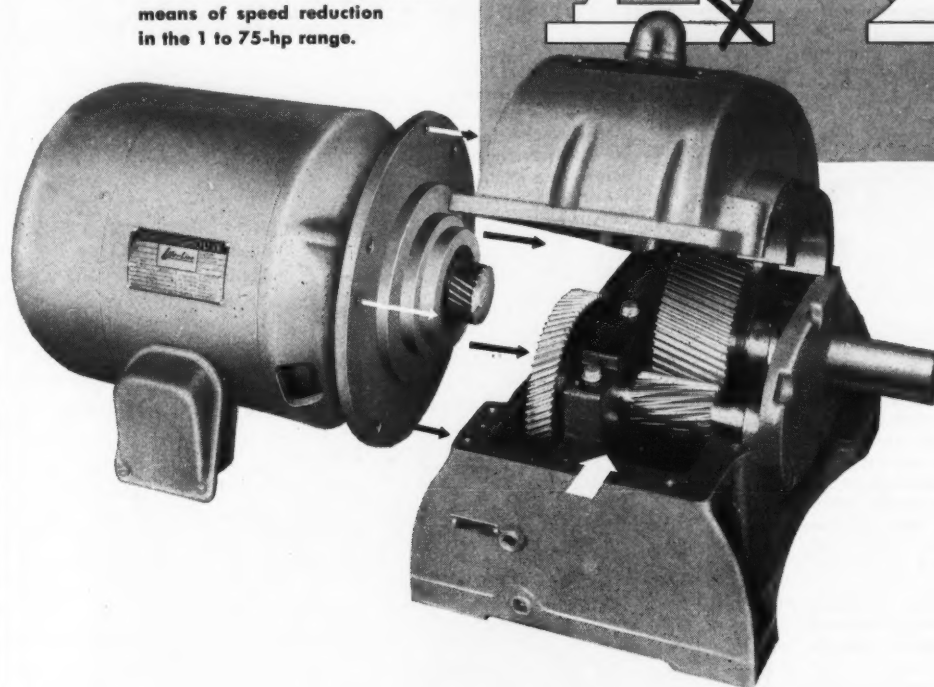
According to the organization, production of more chemicals from wood, such as sugar, glycols, phenols, automotive and industrial fuels, is one of the projects that could be undertaken by the lumber industry for immediate relief of some of its problems.

The publication also suggests a ten-point research program in three major fields: 1) utilization of mill and forest residues; 2) product development of lumber items; and 3) increased efficiency at sawmills and other manufacturing plants.

Thirty-two-page bulletin discusses organization of service laboratory facilities and staff, benefits which organization offers to industry, outline of major research projects, description of patents which have been issued to laboratory, training program, product development, and various publications which are issued by organization.

Manufacturer's illustrated bulletin entitled "Advancements in Wood Research and Timber Engineering" is issued by Timber Engineering Co., Dept. CP, 1319 Eighteenth St., N.W., Washington 6, D. C. When inquiring specify CP 7977 on convenient Reader Service slip, between pages two and three.

Gearmotors are the most efficient means of speed reduction in the 1 to 75-hp range.



## Here's why Life-Line GEARMOTORS stay on the job longer

**LESS TIME OUT FOR SERVICING MOTOR**

Removing the motor from a Life-Line gearmotor takes but a few minutes. Remove the motor mounting bolts and you are on your way—and, reassembly is just as simple and fast. Install the mounting bolts and the job's complete. No realigning of shafts—no coupling to adjust—no mounting feet to shim.

Should you be "on the spot" where down time is critical, this means that your spare motor can be quickly and easily installed. At the most, it is a simple assembly of the adapter bracket.

**LESS TIME OUT FOR SERVICING GEARS**

Here again, Life-Line's split case construction pays off. Simply by removing the top half of the gear

case, the gears can be inspected or removed without touching the mounting bolts—without draining the oil—without disturbing the connected load.

Ask your Westinghouse representative for the details on how Life-Line gearmotors pay for themselves in production time saved. For descriptive literature, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-07313-A

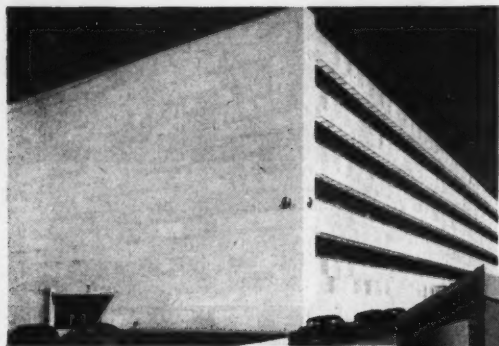
YOU CAN BE SURE...IF IT'S  
**Westinghouse**



When inquiring check CP 7978 on handy form, pgs. 2-3



# 99.99+% PRODUCT RECOVERY SAVES MONEY FOR CHEMICAL PLANTS



**DAY "AC" Dust Filters** are reclaiming abrasive dusts with 99.99+% efficiency for the Coated Abrasives Division of Minnesota Mining & Manufacturing Co., St. Paul, Minn.

The DAY "AC" (Automatic-Continuous Operation) Dust Filter is the most important advancement in cloth dust filtering in over half a century. This dust filter provides high product recovery because the principle of operation permits the use of a better type of filtering felt than can be used in conventional dust filters.

The high product recovery feature of DAY Dust Control Equipment has created considerable interest throughout the chemical industry and we will be happy to send you names of companies using DAY equipment.

## 72 YEARS' EXPERIENCE IN INDUSTRIAL DUST CONTROL

The DAY Company is proud to offer skilled engineering service gained through 72 years of experience in the engineering, manufacture and installation of dust control systems for industry. If you have a dust problem, DAY can provide an effective and economical solution. DAY engineers are at your service for plant studies and cost estimates. Write to-DAY for New Bulletin. It will give you detailed facts and figures on the DAY "AC" Dust Filter and other DAY equipment.

Write to-DAY for New Bulletin. It will give you detailed facts and figures on the DAY "AC" Dust Filter and other DAY equipment.

**The DAY Company**

852-3rd Avenue N.E. • Minneapolis 13, Minnesota  
IN CANADA: P.O. Box 70Y, Ft. William, Ont.  
Branch Plants in Buffalo, Ft. Worth and Welland, Ont.



**DUST CONTROL**

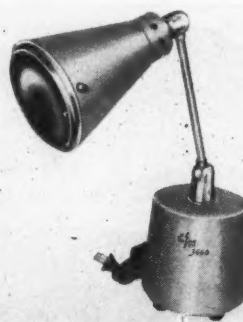
A SINGLE UNIT OR  
A COMPLETE SYSTEM

When inquiring check CP 7979 on handy form, pgs. 2-3

## CONSTRUCTION

### Fluorescence analysis tool furnished by black light unit

A valuable tool for fluorescence analysis is supplied by black light unit in the 3660 angstrom range. Light can be used for examination of raw materials and finished products in processing plants and industrial research laboratories.



Swivel arm allows varied settings

Quartz high pressure mercury arc tube in a sealed beam is utilized to furnish desired wave length. Visible light is eliminated by means of a Corning filter, which transmits only bands in region of 3660 angstroms.

Light unit can be supplied for flood or spot focus. Swivel arm allows settings and adjustments on lamp in practically all directions and positions.

(Cooper Hewitt 3660° Black Light Unit is announced by Cooper Hewitt Electric Co., Dept. CP, 730-732 Grand St., Hoboken, New Jersey. . . or reader may secure more information about this product by simply checking CP 7980 on handy form, pages 2 and 3.)

### Describes manufacture and use of vacuum

Twelve-page reprint discusses and illustrates method of manufacture and uses of vacuum. Illustrations depict use of vacuum in automotive, chemical, food, petroleum, metallurgical, and pharmaceutical industries.

Bul 164 is issued by Ingersoll-Rand Co., Dept. CP, 11 Broadway, New York 4, N. Y. When inquiring specify CP 7981 on handy Reader Service slip between pages 2 and 3.

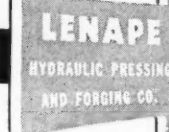
## LENAPE STUDING OUTLETS offer many advantages

Curved Studing Outlets or Pads in ASA sizes and standards provide reinforcement of the shell opening. Studing outlets, naturally short in height and providing reinforcement of the opening, have design appeal, economy in price and fabrication, and advantages in use.

Important applications include interdeck access openings on small diameter towers or columns, boiler mountings, clean-out or observation ports, and similar uses in close-clearance locations.

Sizes 16" and larger (even to 30" I.D.) are ideal access openings and in 18" and 20" sizes are the most modern and economical manway for LPG tanks.

Complete standards on pages 32-33 of Lenape Catalog 9-49.



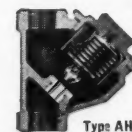
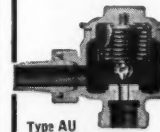
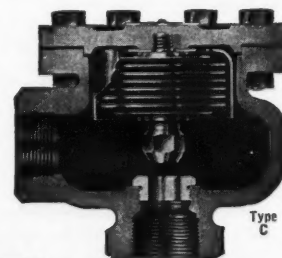
HYDRAULIC PRESSING  
AND FORGING CO.  
DEPT. 100  
WEST CHESTER, PA.  
RED MAN PRODUCTS

When inquiring check CP 7982 on handy form, pgs. 2-3

## CUT PROCESSING CYCLE 20%

### with Nicholson Steam Traps

A large processor reports that substitution of Nicholson thermostatic traps for a mechanical type shortened an important heating cycle from 5 to 4 hours. They credit the higher and more even temperatures Nicholson traps effect. See why leading plants are increasingly standardizing on Nicholsons for faster heat transfer. 5 types for every application: process, power, heat; sizes 1/4" to 2"; press. to 250 lbs.



**BULLETIN 152**

181 Oregon St.  
Wilkes-Barre, Pa.

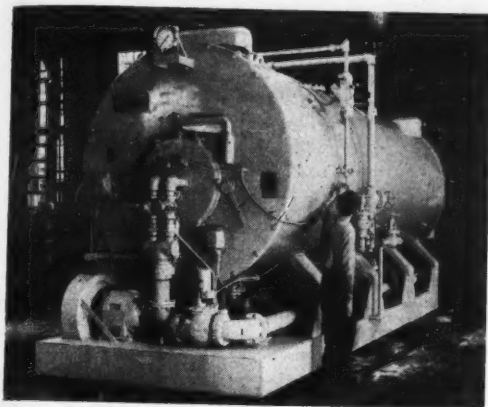
**W. H. NICHOLSON & CO.**  
TRAPS • VALVES • FLOATS

When inquiring check CP 7983 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Jumbo 600 hp unit added to line of steam generators . . .**

boiler is fully automatic and self-contained. A 600 hp steam generator, unusually large for a packaged boiler, has been added to manufacturer's line of similar smaller units. Twenty sizes are now available, from 10 to 600 hp, for pressures from 15 to 200 lb of steam and for firing with oil, gas, or



Light oil-gas combination 600 hp steam generator, connected for gas firing, and ready for shipment. Note easy accessibility of all parts

oil-gas combinations. Generator is fully automatic and self-contained. It is ready for operation when connected to customer's steam, water, fuel, and electric lines, and to his breeching or stack.

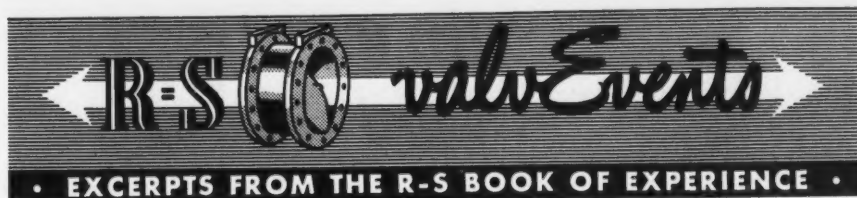
One outstanding advantage of unit is the complete accessibility of all parts. Automatic controls are in an eye-level panel box. Davit-hinged burner head and flue covers greatly simplify servicing. One-piece rear baffle is also davit-hinged. This type of construction is reported to save many hours each time unit is opened for inspection or cleaning. All generators are thoroughly fire-tested before shipment. Thermal efficiency of 80% is guaranteed.

(Amesteam Generators are manufactured by Ames Iron Works, Inc., Dept. CP, Box R-2, Oswego, N. Y. . . or for more data check CP 7984 on pgs. 2-3.)

**Aluminum melting furnaces may be gas or oil fired**

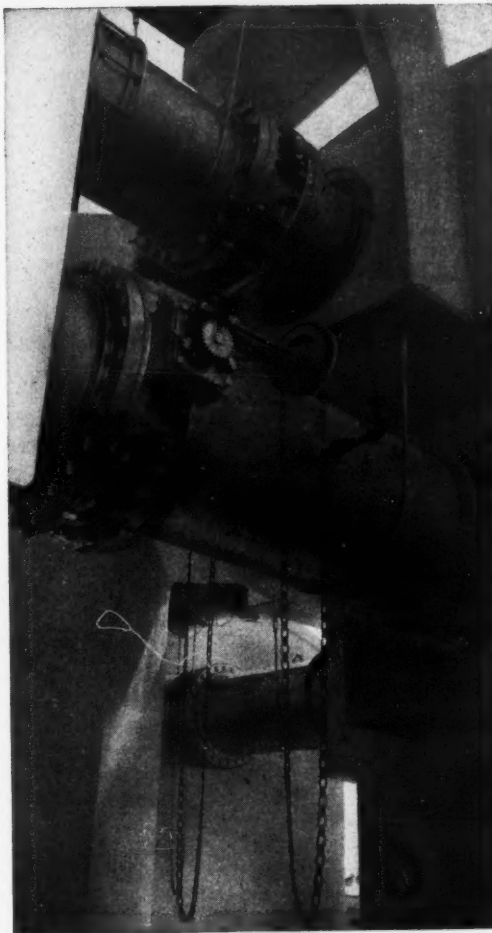
All units in complete line of aluminum melting furnaces are available as either oil or gas fired units. Possibilities of gassing the molten charge or oxidizing the metal have been reduced to a minimum. Other features include compactness, rugged construction, heavy gage structural steel shell, single valve controls, and multiple burners which operate from a common manifold. Bulletin discusses features, construction, and various models of aluminum melting furnaces.

Bul 310 is issued by Lindberg Engineering Co., Dept. CP, 2444 W. Hubbard St., Chicago 12, Ill. When inquiring specify CP 7985 on handy form, pages 2 and 3.



**For Operating Ease in Inaccessible Locations**

## INSTALL R-S CHAINWHEEL VALVES



**Few Chainwheel Turns.** R-S Valves are completely closed from the fully open position by the movement of the valve vane through  $77\frac{1}{2}^\circ$  of arc. Operating ease is one of the chief advantages of R-S Valves.

**Economy in First Cost.** R-S narrow face-to-face design results in minimum number of working parts, less metal, less machining, lower weight and less supporting structure—hence economy in first cost.

**Accurate Engineering.** Body assemblies are accurately engineered mechanically and metallurgically. A. S. A. standards are equaled or exceeded in every detail.

**Low Pressure Drop Saves Power.** In the open position the streamlined vane causes a Venturi action. Pressure drop is therefore exceptionally low. Pumping costs are reduced accordingly.

**More Control Rangeability.** Power-controlled prime movers delivering 15 foot-pounds to 38,000 foot-pounds of torque open or close at any desired speed. Full closure requires one second to ten minutes depending on requirements and the type of material controlled. Positive shut-off is obtained with a rubber seat.

**Self-cleaning.** There are no pockets to house sediment, no change of flow direction to create turbulence or wire drawing and therefore less likelihood of erosion and cavitation.

**Maintenance Practically Nil.** Every R-S Valve is designed and constructed for rugged service and provided with safety factors to give complete satisfaction in the service for which it is designed. Packing trouble is not common to R-S Valves since the shaft moves only with an oscillating motion.

Consult your local R-S Valve Engineers, or write direct.

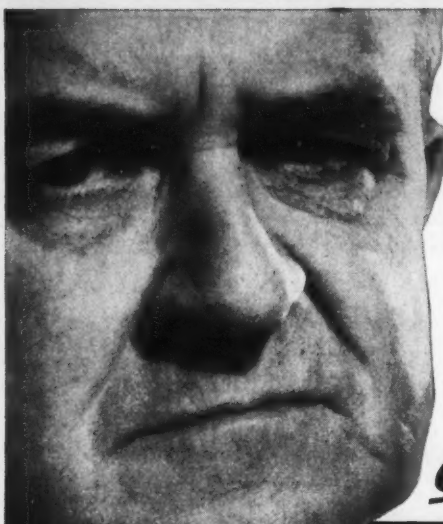
**R-S PRODUCTS CORPORATION • 4600 Germantown Ave., Philadelphia 44, Pa.**

An S. Morgan Smith Company Subsidiary

**DISTRICT OFFICES IN PRINCIPAL CITIES**

When inquiring check CP 7986 on handy form, pgs. 2-3





*"I'm a  
hard  
man  
to  
convince!"*

**ACID-PROOF TANTALUM**  
*Chemical Processing Equipment*

"But it didn't take me long to discover what a sound, economical investment it was to use Fansteel ACID-PROOF TANTALUM equipment in my chemical operations. These are some of the reasons that convinced me . . ."

**Acid-Proof:** Not merely "corrosion-resisting." Very few acids, even at high temperatures, have any effect upon tantalum.

**High Strength:** Tantalum is not subject to thermal shock and will stand the strain of great temperature changes.

**High Thermal Efficiency:** Heating, cooling and condensing efficiencies are surprisingly high.

**Saves Cooling Water:** Tantalum tapered condensers (shown at right) require a minimum amount of cooling water, at all seasons and under all operating conditions.

**Maintenance Economy:** Tantalum equipment is built for long dependable life, freedom from shutdowns, replacement and repair. It usually pays for itself in maintenance savings.

Fansteel engineers are at your service for consultation on any corrosion or heat transfer problem where tantalum can be used economically to your best advantage.

USE TANTALUM WITH ECONOMY for most acid solutions, corrosive gases or vapors; not with HF, alkalis or substances containing free SO<sub>2</sub>.



Acid-Proof

**TANTALUM**

22401

Fansteel Metallurgical Corporation NORTH CHICAGO, ILLINOIS U.S.A.

When inquiring check CP 7987 on handy form, pgs. 2-3

## CONSTRUCTION

**Soldering is facilitated by paste which cleans as it tins . . .**

product has solder suspended in powerful flux

Outstanding advantage of soldering flux is that it cleans as it tins, according to manufacturer. Product, called Hy-Tin, is a paste containing powdered solder suspended in a scavenger action flux. Mastic



Soldering paste can be applied with steel wool, as shown here, or a damp cloth or brush may also be used

is said to spread like butter and to tin metal as difficult as stainless steel. It is also suitable for cast iron, Monel, cast steel, copper, brass, galvanized steel, and lead coated steel.

Flux is stable and non-active at normal temperatures. At soldering temperatures it turns liquid and is powerful enough to remove scale and tin black iron. No mixing is required before application since metal and flux do not separate.

Flux has twofold buffering action. First, it eliminates attack on solder content. Second, it surrounds each grain of solder with film which prevents atmospheric corrosion. Since paste clings to any object, it is easy to work in either vertical or horizontal position.

Flux content adds fluidity to solder, permitting as much as 40 sq ft to be tinned with a single 1 1/2 lb can. Material may be applied with steel wool, damp cloth, or brush.

(Announced by Farrelloy Co., Dept. CP, 1260 N. 26th St., Philadelphia 21, Pa. . . or for more information check CP 7988 on handy form, pages 2 and 3.)

**EXPLOSION-PROOF!!**  
These Special LINCOLN Machines will Scrub, Wax and Polish Your Laboratory Floors to Shining Cleanliness with Absolute Safety!!

**SAVE UP TO 75% ON FLOOR SCRUBBING!**  
Let us prove, without cost or obligation, that even in highly combustible atmospheric locations ONE MAN and a LINCOLN Floor Machine can save you up to 75% on your floor maintenance costs.

There is a recommended LINCOLN for every floor cleaning operation. Ask for a FREE Demonstration

The LINCOLN Model 216EP Explosion-Proof Scrubber and Polisher

Above: the Lincoln Model 500 E AUTO SCRUBBER that scrubs, rinses and dries up to 400 sq. ft. per minute. Electrically operated, explosion-proof construction.

Write Dept. 1-53 for details.

**Lincoln-Schluter**  
FLOOR MACHINERY COMPANY  
1240 WEST VAN BUREN ST., CHICAGO 7, ILLINOIS

World's Manufacturer of the Most Complete Line of Floor Maintenance Equipment

When inquiring check CP 7989 on handy form, pgs. 2-3

## HARPER

Specialist in all  
Non-Corrosive Fastenings!

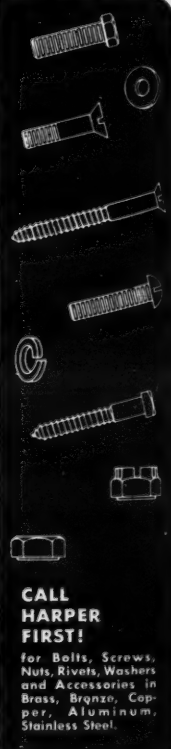
Call Harper first! America's largest producer of non-ferrous and stainless steel fastenings—specializing in bolts, screws, nuts, rivets, washers and accessories in brass, bronze, copper, aluminum, Monel, stainless steel—to solve your problems in corrosion, heat, abrasion and stress. Over 7,000 items stocked by warehouses and distributors from coast to coast.



FREE—this 56-page Harper Price List and Stock Book.



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CALL HARPER FIRST!

for Bolts, Screws, Nuts, Rivets, Washers and Accessories in Brass, Bronze, Copper, Aluminum, Stainless Steel.

When inquiring check CP 7990 on handy form, pgs. 2-3

### Improved welding characteristics in aluminum alloys . . .

permit section thicknesses one-half those employed for similar purposes

Announcement is made of two aluminum alloys, highly resistant to corrosion, which are particularly designed for use in welded assemblies. Typical applications are pressure vessels, tanks, and highway transportation equipment. They permit use of section thicknesses approximately one-half or less that of other aluminum alloys commonly used for similar purposes.

One alloy, XA54S belongs to aluminum-magnesium family and has properties between those of 52S and 56S. Sheet and plates are available in annealed and intermediate work hardened tempers.

Seven 44-ton capacity bottom-dump coal hauling trailers are presently being constructed of XA54S. Alloy is also being used for fabricating a 6000 gal welded tank trailer for an oil company. First welded aluminum bulk cement hauling trailer has recently been completed.

Second alloy, XC56S is similar to Alcoa 56S used for wire products, except that composition has been altered to improve welding properties. It is recommended for general use in annealed (-0) and hot rolled (-H12) tempers. Although commercial value of this alloy has not been thoroughly investigated, laboratory tests indicate that, in annealed and hot rolled tempers, it has weld strengths about 25% higher than XA54S in same tempers.

Both alloys are weldable using inert gas metal arc process (argon tungsten) or the semi-automatic inert gas metal arc process. Welds are ductile and have high elongation. These alloys permit economy in situations where weight is a major factor.

(Product of Aluminum Co. of America, Dept. CP, 801 Gulf Building, Pittsburgh 19, Pa. . . . or for more information check CP 7991 on handy form, pages 2 and 3.)

### Compound steam traps feature large capacity, small size

Designed for automatic drainage of boiler carry-over and condensate loads too large for standard traps to handle, compound steam traps have capacities as much as five times greater than standard units and yet, are merely twice the height and weight of standard units. In addition, traps offer advantage in that they can be overhauled without removing them from line. Units are available with capacities to 300,000 lb/hr in cast semi-steel and forged steel construction with pressures to 600 psig.

Purpose, operation, physical data, capacities, installation, and other data are presented with the aid of photographs, line drawings, cutaway views, and sectional drawings in 8-page bulletin. Bul 215 is issued by Armstrong Machine Works, Dept. CP, Three Rivers, Mich. When inquiring specify CP 7992 on handy Reader Service slip, pages 2 and 3.

## Here's the APPROVED SYSTEM for Batch Treating Cyanide Wastes

This automatic, low-cost system is simplicity itself. It's the B-I-F Industries approved system for batch treating cyanide wastes. Practical, workable, this system represents the combined engineering knowledge and field experience of Builders-Providence, Inc., %Proportioners, Inc., and Omega Machine Company — three major suppliers of equipment for automatic processing, flow measurement, and continuous process control.

... feeds caustic soda for neutralization of acid wastes. Gives exact liquid feed required — operates virtually without any attention or maintenance.

... ideal chlorine gas feeder for reducing cyanide wastes. Safe, simple, highly dependable — Chlorinizer can be easily operated by regular plant personnel.

This and the many other B-I-F Industries approved systems can help you solve your waste treatment problem, whether your business involves meat packing or metal working, distilling or dye making, pharmaceuticals or fish processing. We offer you a complete, "packaged" service — worked out in cooperation with your consulting engineer.

For information about the "package" that's right for your waste treatment problem, write B-I-F Industries, Dept. TW, 387 Harris Ave., Providence 1, Rhode Island.



When inquiring check CP 7993 on handy form, pgs. 2-3

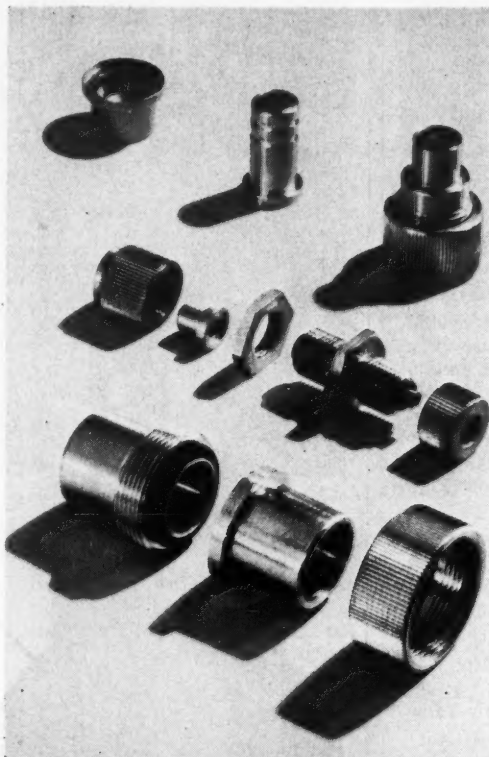


## CONSTRUCTION & MAINTENANCE

### Metal-to-glass connection that's vacuum-tight . . .

since coupling is tightened by hand, it accelerates assembly or breakdown of vacuum system

Tubular elements in vacuum systems may be joined in leak-proof seal by type CHV connectors, which find specific application in connecting metal to glass components of thermocouples, Pirani, ionization, or other type vacuum gage. Connector is hand-tightened,



Breakdown of hand-tightened connectors used to join tubular elements in vacuum system

requires no special wrench, and permits rapid assembly or disassembly of vacuum systems. O-ring, which compresses to make positive seal, is suitable for high vacuum use and temperatures to 200°F. Metal-to-metal connectors fitting standard tubing of stainless, copper, etc. are also available.

(Product of Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. . . or for more information check CP 7995 on handy form, pages 2 and 3.)

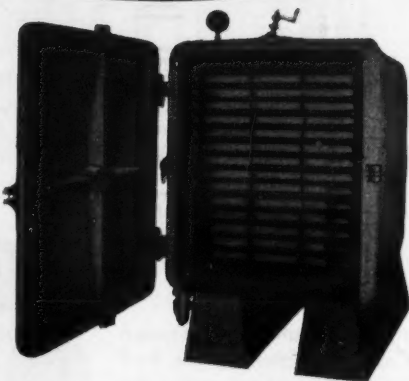
### Eliminates rapping puffs in dust precipitators

Objectionable rapping puffs, a result of intermittent rapping of electrical dust precipitators which causes large quantities of dust to drop into the hoppers, can be eliminated by using a continuous, self-monitoring electrode cleaning system.



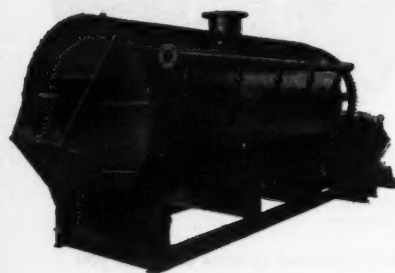
### VACUUM CHAMBER DRYER

Devine Vacuum Chamber Dryers are designed to dry drugs, foods, chemicals and other materials that must not be subjected to high heat, or agitated or broken while drying. Material is dried on heated shelves under vacuum. Heat and vacuum can be regulated, providing positive control of drying process. Available in either cast iron or fabricated steel.



### VACUUM ROTARY DRYER

Devine Vacuum Rotary Dryers consist of a jacketed steel shell equipped with a revolving paddle or ribbon-type agitator with or without a central heating tube. Designed for low-temperature drying of materials that may be mixed or tumbled while drying, they may also be used for solvent recovery



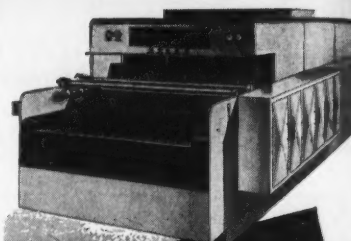
*Devine Engineers, as specialists in drying equipment, have found the answer to many a tough drying problem. If there is a drying step in your process, they can help you. Inquiries invited.*

**J. P. DEVINE MFG. CO., INC.**

49th STREET AND AVRR. PITTSBURGH 1, PENNSYLVANIA

**Devine**  
PROCESS EQUIPMENT

When inquiring check CP 7994 on handy form, pgs. 2-3



**"RUBBER  
COAT"**

**Stops Moisture,  
Mold Attack on  
Mechanical  
Equipment**

Developed for food, beverage and chemical processing machinery, bottle washers and other mechanical units operating under tough conditions! *Real* protection for mechanical equipment constantly exposed to the ravages of moisture, corrosion, mold and mildew. New Tropical heavy-duty Metakote rubber-base gloss enamel—formulated especially for industrial maintenance use—provides a tight, tough, rubber shield that defies attacks of moisture, will not support mold, withstands constant scrubbing, spilling, splashing.

**WRITE!** Your business letterhead request brings all the facts on Metakote and other Tropical paints formulated for the toughest maintenance painting jobs. No obligation, write today!

**THE TROPICAL PAINT & OIL CO.**  
1128-1256 W. 70th, Cleveland 2, O.

**Heavy-Duty Maintenance  
Paints Since 1883**



When inquiring check CP 7996 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Utilizing electrical pulse technique developed for radar, system converts precipitation from a batch process to a continuous, uniform process; continuous, sequential rapping of closely-controlled intensity promotes stable, optimum electrical conditions in precipitation zone.

Principle of operation, components of the system, and features are described in 6-page illustrated bulletin. Photos and circuit diagrams show details of the unit. Bul MI is issued by Research Corp., Dept. CP, Bound Brook, N. J. When inquiring specify CP 7997 on handy form, pages 2 and 3.

#### Translucency of tubing means closer observation of flowing fluid

All inherent electrical and chemical properties of polyethylene have been retained in manufacturer's wide range of piping and tubing, for complete freedom from contamination due to impurities.

Translucency of this tubing and piping permits observation of liquid levels and general flow conditions in the pipe.

Pipe and tubing, called Agilene "CP", are available from 1/4" ID to 30" ID, and with the 1/4" through the 1" diam sizes furnished in coils. The larger tubing is furnished in multiples of individual 4' sections joined by hot gas welding. The 1, 1 1/2, and 2" NPS diam pipe comes in straight 20' lengths for easy installation.

(Polyethylene pipe and tubing is manufactured by American Agile Corp., Dept. CP, P.O. Box 168, Bedford, Ohio . . . or for more information check CP 7998 on handy form, pages 2 and 3.)

#### Insulation blocks feature speedy installation

Two types of block insulation, one fabricated from high temperature mineral wool and the other from diatomaceous silica, combine high temperature resistance and ease of installation. Several of the advantages which are common to each type include: economy and efficiency, all-purpose material, compressive resistance, moisture resistance, permanence, and low density.

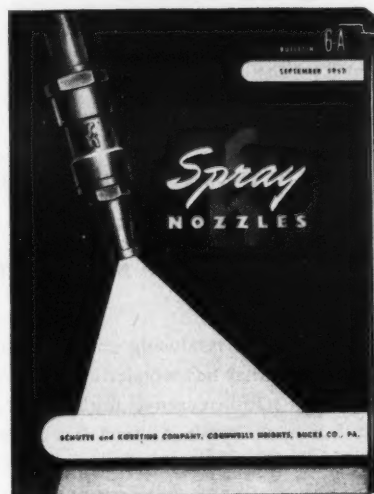
Bul A-147 describes advantages, applications, and performance of mineral wool blocks which withstand a full range of temperatures up to 1700°F. Physical properties and performance data are shown in charts and tables.

Bul A-323 discusses insulating blocks made of diatomaceous silica, designed for temperatures up to 1300°F. Individual sections are devoted to discussion of physical properties, recommended uses, and performance data.

Bulletins are issued by The Eagle-Picher Co., Dept. CP, American Bldg., Cincinnati 1, Ohio. When inquiring specify CP 7999 on handy form, pages 2 and 3.



## New SK Bulletin Simplifies Selection of Spray Nozzles



Bulletin 6-A—just issued—contains detailed, concise information on the many types of Spray Nozzles manufactured by SK. It was designed to enable industrial buyers to specify the right nozzle to meet application requirements.

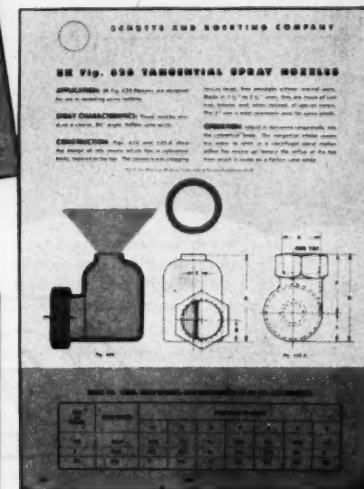
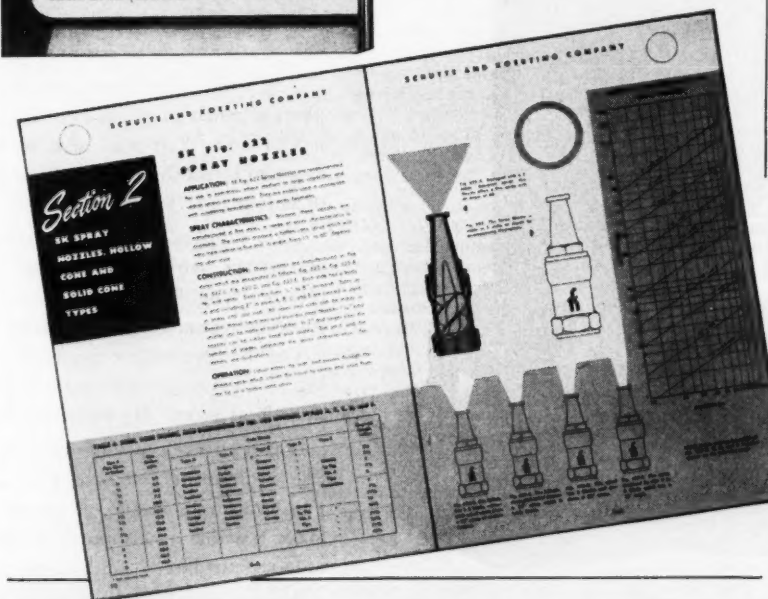
A tabular index in the front of the catalog lists each nozzle by number and gives its primary application, spray characteristic, materials of construction and the page showing detailed description.

For ready reference, Atomizing Nozzles, Spray Nozzles and Spray Nozzle Clusters are treated in separate sections.

Construction, spray characteristics and capacities are given for each type of nozzle, and differences in design or materials of construction are noted. Descriptive material and illustrations are supplemented by dimension tables and capacity charts.

SK Spray Nozzles are widely applied in mixing, coating, cooling and scrubbing processes. Other typical applications range from atomizing, washing, and aerating liquids to absorbing gases.

Bulletin 6-A is made up of 20 pages of complete, useful material. Request a copy for your files. It's yours for the asking.



When inquiring check CP 8000 on handy form, pgs. 2-3





## we've built a GIANT

... to produce high vacuum in  
bigger chambers—at  
less cost—than ever before

Say you're producing one of the modern metals that has wonderful properties but can't stand oxygen at high temperatures. Or maybe your problem is a large wind tunnel, a synchro-cyclotron, or a vacuum dehydration chamber for biologicals.

You want to push out into the atmosphere as much air or gas as possible at the lowest cost. You may need to exhaust down to 1/2000th of atmospheric pressure or as low as 1/75,000th of an atmosphere.

CVC supplies a series of nonmechanical pumps which can operate in this pressure range at rates well over 10,000 cubic feet per minute, compressing air and gas to the point where mechanical pumping becomes highly efficient—to pressures as high as 10 mm Hg where needed.

If you will tell us your vacuum pumping requirements, we'll be glad to show you how these unique oil ejector pumps make possible a new order of operating economy for large high vacuum systems.

Write Consolidated Vacuum Corporation, Rochester 3, N. Y. (Subsidiary of Consolidated Engineering Corporation, Pasadena, Calif.)

**CVC**



**Consolidated Vacuum Corporation**  
high vacuum research and engineering

## CONSTRUCTION

### Emergency power unit uses nickel-cadmium batteries . . .

6, 12, 24, 32, 110 v systems  
are guaranteed for 10 years

Automatic charging and nickel cadmium batteries are combined in Light Warden power system for emergency operation of lights, fire alarms, and public address

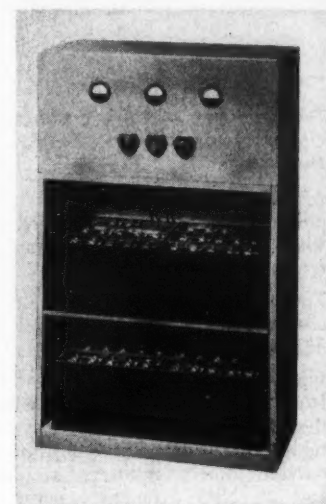


Photo shows 32 v power system with  
bank of nickel-cadmium batteries

systems. In addition to not generating corrosive or poisonous gases, battery is unconditionally guaranteed for 10 years but should give about 20 to 30 years of useful life.

System responds automatically when regular current fails, but it may be left idle without attention in any state of charge or discharge without fear of damage. It is not affected by low temperatures, excessive discharge or short circuits. Available in 6, 12, 24, 32, and 110 volts with ampere capacity to meet specific requirements, system is housed in cabinet with height, width, and depth dimensions of 42 x 26 x 14".

(Product of Electric Cord Co., Dept. CP, 195 William St., New York 38, N. Y. . . . or for more information check CP 8001 on handy Reader Service slip between pages 2 and 3.)

For more information on product at left, specify CP 8002 . . . see information request blank between pages 2-3.

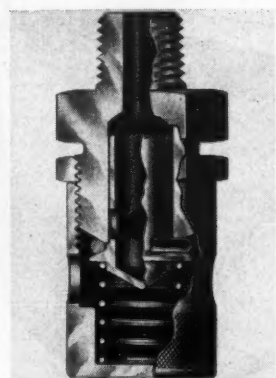
**Extreme precision provided  
in pop-off valve for  
low pressures . . .**

test unit is still operating satisfactorily after seven million cycles

**Uses:** Unit is designed for relief pressures from 2 to 45 psi. It is used for controlling gases safe to release into the atmosphere, such as nitrogen and carbon dioxide. Its application is to provide protection in systems where leakage cannot be tolerated for functional reasons or is undesirable from an economical standpoint.

**Features:** Sealing principle employed in valve is said to make it extremely precise. One customer, who has had valve on test, reports over 7,000,000 cycles, with unit "still going strong."

**Description:** Low pressure relief type valve employs firm's patented Circle-Seal principle. Designated as 5400 series, valves are adjustable. Adjustments can be pre-set at factory or can be made by users.



Cutaway view reveals construction of adjustable low pressure relief valve

Sealing principle employs a resilient, standard, easily replaceable O-ring, which is self-aligning between two conical seats of a poppet type valve. O-ring seal is used by itself only for very low pressures (2-6 psi). For higher pressures, O-ring is supplied with a

metal "back-up" ring to prevent undue expansion under pressure.

As "back-up" ring floats with O-ring, it does not in any way interfere with valve's sealing characteristics. Overall advantages are dead-tight sealing and zero leakage at pressures up to or close to the cracking pressures. Same advantages are present at re-seating pressures close to the cracking pressure.

(Product of James-Pond-Clark, Dept. CP, 2181 E. Foothill Blvd., Pasadena 8, Calif. . . or for more information check CP 8003 on handy form, pages 2 and 3.)

**Catalog illustrates equipment  
for power transmission**

Comprehensive catalog of power transmission equipment gives descriptions of V-belts, detachable link V-belts, pulleys, sheaves, roller chain, belt lacing, speed reducers, and other similar items.

Cat R-103-A is issued by Rockwood Pulley Manufacturing Co., Inc., Dept. CP, 20 Crosby St., New York 13, N. Y. When inquiring specify CP 8004 on handy form, pages 2 and 3.

# TYGON

*Versus*  
**C<sub>17</sub>H<sub>33</sub>COOH**

**O**LEIC acid and the other fatty acids have many uses. By the same token, they also can represent many problems in the fight against corrosion. Particularly at high temperatures, under aeration, or in combination with other chemicals do they prove troublesome.

There are a number of materials which offer protection against oleic acid. Among them is the TYGON family of plastic compounds. However, the satisfactory use of TYGON compounds against oleic acid depends upon their proper use—upon the realization of the limitations of organic resins and plasticizers in contact with organic acids.

The TYGON family consists of a number of standard and special compounds based on a series of selected vinyl resins which are skillfully modified with other materials to give the maximum in resistance to acids, alkalis, oils, greases, water and most solvents. They are also designed to give the best balance of chemical resistance with desirable physical, mechanical and electrical properties. For further versatility, TYGON is made available in the forms of calendered or press-polished sheeting, molded goods, extrusions, paints and plastisols.

Against the oleic acid, the resistance and performance of TYGON, in any of its forms, depends primarily upon the concentration of the acid and the service temperatures involved. At low acid concentrations and low temperatures, the resistance and performance of TYGON are excellent. However, as concentration or temperature increase, definite changes take place. If both are increased, the apparent limits are full concentration at 125°F. Beyond this point, the protectability of TYGON is relatively unaffected, but physical changes limit its performance. Pronounced hardening and stiffening gradually take place, along with a noticeable color change. Thus, at high temperatures, the effi-

ciency of TYGON is reduced with time and concentration.

Where mixtures of oleic acid and other chemicals are encountered, the resistance of TYGON varies according to the nature of the other chemicals present. It is difficult to estimate the degree of protection offered, without full knowledge of the existent conditions. Previous testing or the counsel of U. S. Stoneware engineers is strongly recommended.

In general, TYGON safely handles oleic acid at the concentrations and temperatures normally encountered in its use. Only the extreme cases require special consideration. In addition, the variety of compounds and the different forms available give TYGON wide application.

As calendered or press-polished sheeting, TYGON is used to line and cover all types of process equipment. It also is die-cut in positive and enduring gaskets, seals, and separators.

As molded goods, TYGON is also used for gasketing, but has many other uses which are limited only by the size and shape that can be imparted to a thermoplastic material by mold and press.

As extruded tubing (in sizes up to 2" ID), TYGON finds many uses in both plant and laboratory. Its clarity, flexibility, light weight, and high strength greatly speed and simplify the transmission of corrosive liquids, gases and semi-solids. Extruded solid cord and channel are also used as gasketing, expansion jointing, and packing.

As a paint, TYGON protects equipment and plant against corrosive fumes and spillage. As a plastisol, TYGON is used as a heavier duty coating or in the manufacture of flexible parts and fittings.

If you have fatty acid, or any chemical, corrosion problems, look into TYGON. It may well be the sure, simple, economical answer.



In addition to TYGON in its various forms, we also manufacture a number of other materials capable of handling oleic acid and other fatty acids in any concentration and under all types of operating conditions. These products include chemical stoneware and porcelain, acid proof brick and cements, homogenous lead linings, and other organic linings and coatings.

Why don't you submit your corrosion problem today? There's no obligation and we'll be pleased to be of assistance. So write, now!

830

**THE UNITED STATES STONWARE CO., Akron 9, Ohio**

ENGINEERS, MANUFACTURERS, ERECTORS OF CORROSION-RESISTANT EQUIPMENT SINCE 1865

When inquiring check CP 8005 on handy form, pgs. 2-3



**GIVES YOU BEST**  
*Performance*  
**Because it's Best  
Suited to the Job**



**WELDCO**  
**Always**  
**Meets Your**  
*Specifications*

**TO GET TOP-QUALITY TUBING** made to your individual needs, it's always good business to specify Weldco. For Weldco is produced by tubing specialists—men who have the equipment, facilities and experience to manufacture tubing to your exact specifications. Weldco is automatically machine-welded under pressure, properly formed, carefully finished, accurately sized and straightened, and rigidly checked.

Lightweight and corrosion-resistant, Weldco is available in Monel, Stainless, Inconel, Nickel and other alloys, in sizes from 3½" to 30" O. D., 16 ga. to ¼" wall thickness. To insure top performance and long service life, make Youngstown Welding your tubing headquarters. A letter or phone call puts our 36 years of specialized experience to work for you.

Whatever Your Needs In Tubing... You're Way Ahead With WELDCO

**THE YOUNGSTOWN WELDING & ENGINEERING CO.**  
3712 OAKWOOD AVE. • YOUNGSTOWN 9, OHIO

When inquiring check CP 8006 on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

### **Thermocouples are held securely with tube fittings**

Manufacturer's standard (Swagelock) tube fittings, bored completely through at one diameter, are now available for holding thermocouples.

In an emergency, regular connectors can be bored completely through to the required diameter in user's



Comes in fractional sizes

own shop to accommodate a thermocouple. Connectors can be furnished in sizes from ⅛" up and in brass, aluminum, steel, stainless steel, and Monel.

(Development of the Crawford Fitting Co., Dept. CP, 884 E. 140th St., Cleveland, Ohio... or for more information check CP 8007 on handy form, pages 2 and 3.)

### **Alumalloy construction makes junction box explosion-proof**

Type GRJ explosion-proof junction box is made of Alumalloy, which affords resistance to rust, corrosion, and sparking. Strong but lightweight box measures 10 x 8 x 5¼" and will take conduit up to and including 3" sizes. It can be supplied with hubs in any location and large open-cover design facilitates installation as well as splicing.

Manufacturer's line of electrical fittings also includes the VLJ series of vapor-tight box, which is also made of Alumalloy and taking up to 1" conduit sizes. All members of this series are four inches in diameter with depth ranging from 1⅝ to 3½". Blank or hub cover can be furnished as well as adapter plates to accommodate vapor-proof lights or other outlet device for 3¼ and 4" outlet boxes.

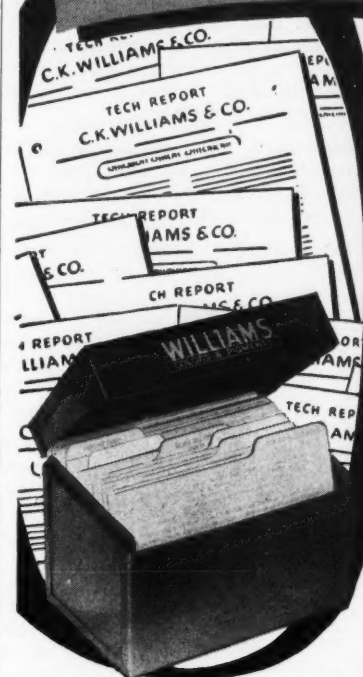
(Products of Killark Electric Mfg. Co., Dept. CP, Vandeventer and Easton Ave., St. Louis, Mo... or for more information check CP 8008 on handy form, pages 2 and 3.)

### **Features contribute to use of hard-facing alloy**

Good resistance to abrasion at high temperatures, improved welding characteristics, and the ability to withstand attack by molten copper are advantages reported to give versatility to CM-119 hard-facing alloy.

Abrasion resistance at temperature of hot-rolled steel lends its application as hard facing for large guide rolls and as hot friction guides and soaking tong bits. Resistance to molten copper makes alloy serviceable as protection for lips of copper converters. Applied by arc welding process, material will weld over itself and more ferrous substances without

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TECH REPORTS  
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If your job involves color formulation and the selection of pigments, you'll welcome the useful information contained in these handy technical reports. They've been prepared by Williams to make it easier for you to quickly select a pigment having chemical and physical properties which hit your color specifications "on the head". Each report describes the origin of the pigment, how it is made, its chemical and physical properties, and its applications. The reports cover Pure Red Iron Oxides, Pure Yellow Iron Oxides, Chromium Oxides, Venetian Reds, Siennas and Umbers, Metallic Browns and others. Write today for your complete set. Address Department 28, C. K. Williams & Co., Easton, Pennsylvania.

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**COLORS & PIGMENTS**

**C. K. WILLIAMS & CO.**

East St. Louis, Ill. • Easton, Pa. • Emoryville, Cal.

**108 Shades and Types of  
Iron Oxide Pigments**

When inquiring check CP 8009  
on handy form, pgs. 2-3

CHEMICAL PROCESSING

cracking, checking, or porosity. This permits patching where previously full replacement was necessary. Alloy may be used for both initial hard facing and subsequent rebuilding.

(CM-119 Hard-facing Alloy is product of Coast Metals, Inc., Dept. CP, Little Ferry, N. J. . . . or for more information check CP 8010 on handy form, pages 2 and 3.)

**Delivers 5500—38,000 cfm of air against resistance pressures to ventilate plant**

Engineered to operate against minimum resistance pressures, industrial fan has delivery range from 5500 to 38,000 cfm of air. Diameters of airfoil blades range from 24 to 48" and fan is mounted in square panel with flanged holes for simple installation. Motor is totally enclosed, capacitor type with ball bearings permanently lubricated and sealed. Aluminum alloy blades are non-overloading and may be replaced individually if broken.

(Product of Hunter Fan & Ventilating Co., Dept. CP, 400 S. Front, Memphis 2, Tenn. . . . or for more information check CP 8011 on handy form, pages 2 and 3.)

**Rubber-base paint for masonry resists chipping and peeling**

Butadiene-styrene alkyd base is used to make Ferrolastic masonry paint, which is intended for use on both interior and exterior surfaces but not floors. This rubber-base paint will reportedly resist chipping and peeling resulting from extreme changes in the weather. Applied by brush or spray, coating is available in four colors and white.

Manufacturer's line also includes a white exterior paint which is non-chalking, fume-proof, and resists deterioration by mildew. Manufacturer's ready-mixed primer is used with paint, which can be tinted with colors in oil.

(Both paints and primers are products of McDougall-Butler Co., Inc., Dept. CP, 2929 Main St., Buffalo 14, N. Y. . . . or for more information check CP 8012 on handy form, pages 2 and 3.)

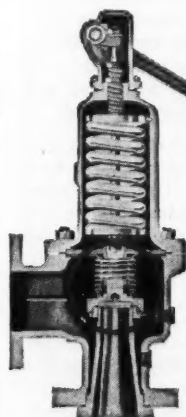
**Comprehensive information on demineralized water**

Informative 11-page report discusses uses for demineralized water and includes a water analysis study. Comprehensive information is given on uses of demineralized water and points up advantages of material in manufacturing and processing operations.

"Uses for Demineralized Water" is issued by Barnstead Still & Sterilizer Co., Dept. CP, 123 Lanesville Terrace, Forest Hills, Boston 31, Mass. When inquiring specify CP 8013 on handy form, pages 2 and 3.



## Stuck by CORROSION



Who's stuck when corroded safety valves stick? Operators, production manager?

None of this was necessary. If you want 100% safety—and you'd hardly want less—there's one sure way to get it—specify BalanSeal or FarriSeal Valves.

Why? Because they can't stick, plug or corrode. Critical working parts are permanently isolated from any contact whatever with the lading.

Because they're unaffected by back pres-

sures in the discharge manifold due to its own operation or to the opening of other valves in the line.

Because these features make it possible for you to use smaller discharge piping, an economy which is often substantially more than the valve cost.

You'll be interested in the engineering of BalanSeal and FarriSeal Valves—design which is rapidly gaining acceptance in hundreds of successful installations.

Ask for our "8-Minute Brief."



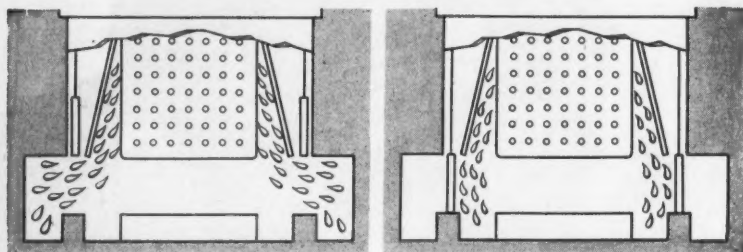
Your Safety's REAL With FarriSeal

When inquiring check CP 8014 on handy form, pgs. 2-3



# LOOK!

2 successive liquids  
separated without mixing



**CURB OPEN** to permit first liquid to be separated and evacuated from machine.

**CURB SHUT**, second liquid is separated and removed through lower outlet without mixing with first liquid.

## Industry benefits from broad use of centrifuging . . .

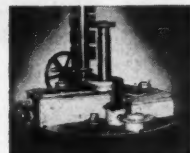
thanks to new AT&M developments. The centrifugal above — a profitable investment wherever two or more liquids are separated in a cycle — is but one of many outstanding AT&M centrifugals that save time, space, costs.

As the drawings above show, this curb is designed to remove two successive liquids without mixing. With the curb open, the first liquid is separated and evacuated through the curb outlet. The curb is then closed and the second liquid is separated and removed through a different outlet.

You, too, can benefit with AT&M equipment. Does away, in many instances, with settling tanks, filter presses, squeeze rolls, vacuum presses. Used in processes involving chemical preparations — explosives — nitrating — acid wringing — ammonium sulphate — food products — soap — drugs, medicines, cosmetics — oils and greases — paints, varnishes — ceramics, brick, clay — fertilizers — nitrates — sludges — textiles — carbonizing (textiles) — plastic bases.

Find out now how AT&M centrifugals can help you. Send for free booklet today.

**P.S. PROVE TO YOURSELF** how centrifuging can benefit you. Send us a sample of your material for centrifuging to your specifications or rent an AT&M laboratory centrifugal for your own tests at a nominal fee.



**FUME-PROOF.** No gases can escape from this specially designed AT&M centrifugal. Its fume-tight hood — originally developed by AT&M engineers to solve a special problem — is now used to advantage by many firms processing volatile liquids.



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ILLUSTRATED BOOKLET

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Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐  
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

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Company . . . . .

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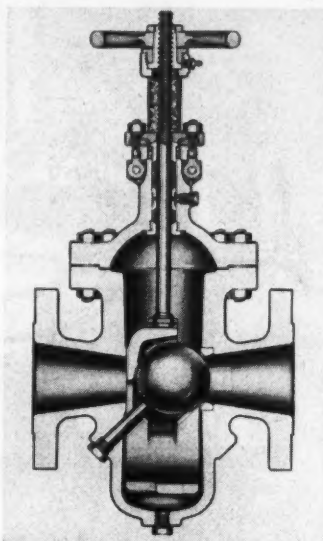
SAVE TIME,  
SPACE AND  
COSTS WITH **A.T. and M.**  
CENTRIFUGING

When inquiring check CP 8015 on handy form, pgs. 2-3

## CONSTRUCTION

**Accurate control of flow  
furnished by ball disk  
of Venturi valve**

Unusually accurate flow control is said to be provided by Venturi valve in which disk is a ball instead of conventional shape. Design minimizes wire-drawing and permits straight-through flow with much



Ball rides freely

lower pressure drop than through a globe valve. Unit is easily operated and has tight shut-off. No vibration or chattering occurs.

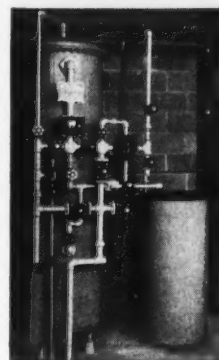
Ball is not attached directly to stem, but rides in a cage which is fastened to stem by tee-head slotted construction.

In operation, ball is moved to and from center of flow and rolls into and out of body seat. Ball disk is mechanically locked in closed position by a wedging member on cage. In moving to fully open position, ball rolls out of seat and up, until it is lined vertically with stem and is carried out of path of flow.

Valves are available in Venturi patterns, with flanged ends, in cast carbon steel and 18-8 Mo alloy steel. Sizes, which begin at 1", cover a wide range. Cast steel valves can be obtained in 150, 300, and 600-lb. classes, and alloy valves in 150 and 300-lb classes.

(Announced by Crane Co., Dept. CP, 836 S. Michigan Ave., Chicago 5, Ill. . . . or for more information check CP 8016 on handy form, pages 2 and 3.)

## ULTRA-DEIONIZER Produces Highest Quality Mineral-Free Water



This remarkable single tank, mixed-bed ion exchange unit produces deionized water for less than 25 cents per 1000 gallons (based on 10 grain water).

### FEATURES

- Replaces Distillation or Evaporation — at 1% to 10% of the cost
- Removes All Ionizable Impurities — including CO<sub>2</sub> and silica
- Up to 44% Greater Capacity — double-check design
- Requires Minimum Space — lower investment cost

Write for Bulletin 512

### ZEOLITE WATER SOFTENERS

New Bulletin 611 describes "Double-Check" type water softener that delivers up to 44% more soft water. Also covers complete line of equipment and treatment for any water conditioning need. Write for your copy.

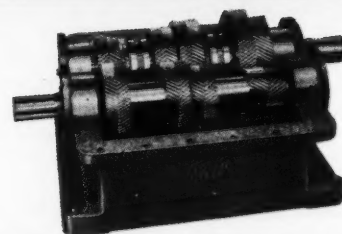
**ELGIN**

**SOFTENER CORPORATION**

180 North Grove Avenue, Elgin, Illinois  
WATER CONDITIONING SINCE 1908

When inquiring check CP 8017 on handy form, pgs. 2-3

## Philadelphia CHANGE-SPEED UNIT



### Standardized Construction —to give you Greatest Economy

Based on long experience in building Change-Speed Units to individual specifications, Philadelphia has developed a line of *standardized units*. This cuts the high cost and delayed deliveries of former methods.

Units are positive geared drives using herringbone gears throughout. No belts to wear or slip. Ratios are definite for speed increasing or reduction or in combination. Wide range of horsepowers in 2, 3 and 4 speed units.

Write for catalog giving full details.

**PHILADELPHIA GEAR WORKS, Inc.**  
ERIE AVENUE AND G STREET • PHILADELPHIA 34, PA.  
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA

When inquiring check CP 8018 on handy form, pgs. 2-3

**No flaring, threading, or welding to connect tubes carrying liquids or gases . . .**

nut adjustment shears groove into tube's surface to assure leak-proof joint

**Uses:** As fitting on high pressure lines or wherever metal tubing is used for transferring gases or liquids.

**Features:** No flaring, threading, welding, soldering, special tools, or other special preparation are required for installation of fitting.

**Description:** Ermeto tube fitting consists of sleeve, nut, and tapered body.



Nut is tightened to give leak-proof joint in metal tubing

As nut is tightened, it forces sleeve forward into taper of the body. Leading edge of sleeve contracts, thus forcing cutting edge to shear a slight groove into outer surface of tubing to provide a leak-proof joint between fitting and tube. Nut pressing on bevel of the sleeve results in tight, positive grip on tube.

When fully tightened, sleeve is bowed slightly at mid-section, causing it to act as a lock-washer. Locking action maintains constant tension between the body and nut, thereby preventing loosening of nut. Disassembly and re-assembly of fitting can be made without any loss of sealing quality. Available in carbon and stainless steels, fittings can be obtained in Monel and brass upon special request.

(Products of The Weatherhead Co., 300 E. 131st St., Cleveland 8, Ohio . . . or for more information check CP 8019 on handy form, pages 2 and 3.)

**This paint can be applied to metal right over rust**

Rust inhibiting paint, when applied to metal structure which is already rusted, penetrates rust and goes right down to base metal where it chemically inhibits further rust formation. Prior to application of the paint, painter merely wire-brushes heaviest rust scale away. Paint protects metal surfaces against corrosion due to atmospheric conditions, produces highly impermeable weather-resistant coating which expands or contracts with temperature changes, and does not crack, chip or peel.

"Sure Rust Prevention" gives features, specifications, and uses of rust inhibiting paint. Illustrations show results of use of paint on surfaces subjected to various environmental conditions. Bul BP 4021 gives comprehensive technical information regarding use and performance of coating. Bul 4059 outlines features and available types of paints.

The three bulletins describing paint are issued by Dept. P-5, L. Sonneborn Sons, Inc., Dept. CP, 80 8th Ave., New York 11, N. Y. When inquiring specify CP 8020 on handy form, pages 2 and 3.

**Now you can make your own**

# High-Purity OXYGEN and NITROGEN

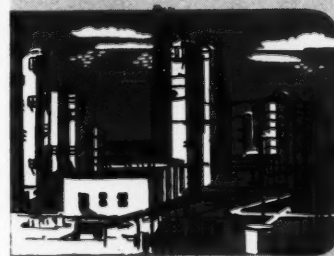
*simultaneously* — with **ONE** Generator



Steel Scarfing



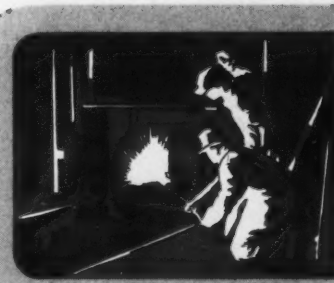
Metallurgical



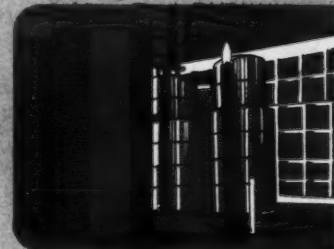
Chemical-Petroleum

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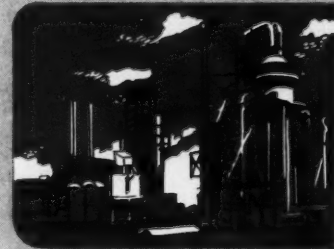
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Heat Treating



Annealing



Chemical-Petroleum

- ★ Assured supply at less cost
- ★ Both products from one generator
- ★ Use one raw material: the free air
- ★ Oxygen purities to 99.9%—nitrogen to 99.99%
- ★ Flexible—any quantity at any pressure
- ★ Safe, simple—easy to operate

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Specialists in Equipment for All Low-Temperature Processes

Slash costs of inert gas—while you cut costs of high-purity oxygen! Make *both* in your own plant with *one* Air Products Generator. Standard *High-Purity* models are available with oxygen capacities from 2500 to 12,000 cubic feet per hour—nitrogen capacities from 4000 to 36,000 cubic feet per hour. *Liquid* oxygen and nitrogen if desired. Also *Tonnage* Generators in standard models, or of special design. Capacities *unlimited*! Write us your requirements, and send for our CATALOG.

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and Tonnage

**OXYGEN-NITROGEN GENERATORS**

When inquiring check CP 8021 on handy form, pgs. 2-3



# THE **RIGHT** AGITATING EQUIPMENT SAVES YOU MONEY



*Only Netco* offers such a wide range of agitating equipment:

- ✓ Tank-top Agitator Drives
- ✓ Double-motion Agitator Drives
- ✓ Side-Entering Agitator Drives
- ✓ In-the-pipeline Mixers (Flomix - Pat'd.)
- ✓ Stirrers — turbine, propeller, paddle
- ✓ Agitator fittings — couplings, bearings, etc.

Because a NETCO Engineered AGITATOR is designed for the specific process requirements, it's sure to save money on the job. From the top bearing in the agitator drive to the stirrer in the tank — the complete Netco Agitator is carefully worked out to take best advantage of Netco's extensive line of standard components. The *right* agitating equipment—engineered and built by Netco—is both economical to buy and economical to operate.

Find out now why it pays to pick Netco. Send for information, recommendations, quotations. New England Tank & Tower Company, 93 Tileston Street, Everett 49, Mass.



When inquiring check CP 8022 on handy form, pgs. 2-3

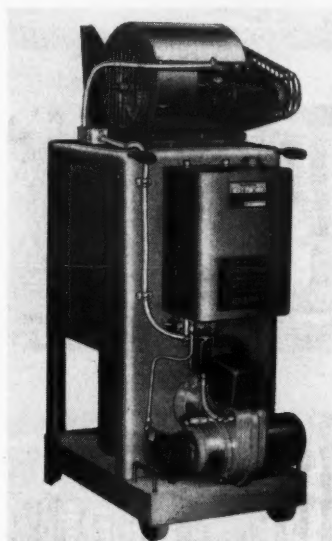
## CONSTRUCTION

**Blanket of warm air is sprayed over 25' floor area . . .**

portable unit easily adapted to cooling

**Uses:** For industrial heating or cooling. It is applicable for treating concrete or setting paint or plaster. It is adaptable to many other heating or cooling applications, indoors and outdoors.

**Features:** Machine delivers from floor level, spraying a heating blanket of air over an area 25' in radius. Mounted on wheels, unit is portable and easily handled. It



Machine delivers heat from floor level

can be readily adapted to circulate cool air by changing blower position.

**Description:** Standard Model L heat machine is a complete unit, containing tank, burner, blower, and pump. No chimney, vents, ducts, or oil pipes are required. Model H may be used unvented or connected to a chimney.

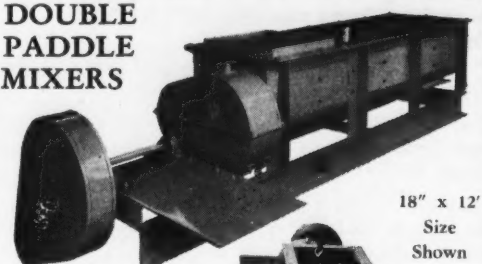
Burner is UL approved, high pressure type. It burns light diesel, stove oil, or No. 2 furnace oil. Blower is 1000 cfm positive circulation type. Unit incorporates automatic ignition and controls set for safety and fast starting. Heat output is 175,000 Btu per hour.

(Heat machine is product of Mortemp Heat Machine Co., Dept. CP, 2310 Rainier Ave., Seattle 44, Wash. . . . or for more information check CP 8023 on form, pgs. 2-3.)

PROCESSING MACHINERY MANUFACTURERS SINCE 1885

## for Continuous Processes

### DOUBLE PADDLE MIXERS



### Available in 12 Standard Sizes

With or without Heating Jackets or Cooling Jackets, — A variety of Feed Openings, Discharge Valves, Shapes and Sizes of Paddles, — built with Stainless Steel or other materials, including Liners for handling corrosive or abrasive mixes.

INFORMATION ON REQUEST

## GRUENDLER CRUSHER & PULVERIZER CO.

2915 North Market St.

St Louis 6, Mo.

When inquiring check CP 8024 on handy form, pgs. 2-3

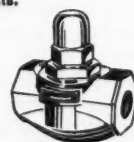
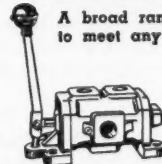
## LOGAN AIR AND HYDRAULIC POWER

SPEEDS • COORDINATES • REFINES PRODUCTION  
IN OVER 10,000 INDUSTRIAL PLANTS

**Logan**

### HYDRAULIC CONTROL VALVES

A broad range of types and sizes to meet any requirements.



### LOGAN ADVANTAGES . . .

- Ease of Installation
- Effortless Operation
- Long-Life Construction
- Unrestricted Porting
- Easy to Service
- Infrequent Maintenance



LOGAN MANUFACTURES 6,975 STANDARD CATALOGUED ITEMS • CATALOG ON REQUEST

Let Logan Engineers help you design your Air and Hydraulic Circuits.

LOGANSPOUT MACHINE CO., INC.

835 Center Avenue Logan, Indiana

When inquiring check CP 8025 on handy form, pgs. 2-3

**After more than a million strokes,  
multi-purpose lithlum grease  
is still good**

Mechanical stability of a lithium base grease is indicated by test in which product withstood over a million strokes in an ASTM Motorized Worker without loss of body. Results are being verified in field performances over a wide range of rugged conditions and industries. Multi-purpose properties of product are attributed to use of lithium 12-hydroxy stearate.

Among other properties of grease permitting wide application are its high water tolerance. It has been known to maintain peak consistency and lubricating qualities with as much as 32.5% water present. Material has broad temperature range, achieving high pump-ability and movement at low temperatures, and undergoing no phase change as temperature rises to high melting point. It has low rate of oxidation, long induction period, and excellent storage stability.

Combined properties are said to reduce grease consumption, eliminate misapplication, and decrease inventory requirements. It is reported to have increased bearing life as much as 90% under severe conditions. Since it stays in bearings longer, relubrication periods can be considerably extended.

(Alvania Grease is product of Shell Oil Co., Dept. CP, 50 W. 50th St., New York 20, N. Y. . . . or for more information check CP 8026 on handy form, pages 2 and 3.)

**Multiple sieve arrangement gives  
gyratory sifter variable capacity**

Designed for flexibility of production capacity, gyratory sifter unit can be expanded in capacity as requirements change as units are available with 3, 4, 5, or 6 standard sieves, or, 7 narrow sieves. Another feature of interest to users is ability to change from one type of product to another easily and quickly. In addition, sieves can be removed and replaced with a minimum of time and skill.

Sifter is designed to provide efficient separation of dry granular products into pre-determined grades. Depending upon physical and chemical characteristics of products to be screened, separation is effected by means of silk or metal screens. Equipped with one inlet, located conveniently for feeding from a hopper, conveyor, or chute, unit is designed to fit into almost any processing arrangement. Efficient gyratory motion is gentle enough that fragile particles can be handled with a minimum of disintegration, thereby reducing undesirable undersize particles.

All-metal unit can be used in the baking, food, grain milling, distilling, brewing, chemical, and other industries for cleaning and grading operations. Sifter dimensions, capacity curves, and screen specification mesh comparisons are included in descriptive bulletin. Bul 06B7625A is issued by Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 8027, pages 2 and 3.

**ANNOUNCING  
THE NEW  
LUNKENHEIMER  
VALVE  
HANDWHEEL**

**"non-slip"\***  
for  
positive closing

This revolutionary "Non-Slip" Handwheel introduces another Lunkenheimer improvement! Four rounded, non-slip lugs are gripped comfortably and firmly — operator's hand can't slip, even when wet or greasy. Result: Ordinary hand leverage closes the valve tight.

The new "Non-Slip" Handwheel is cooler, too—and keeps the operator's hand away from the top of the stem, which may be hot. It's sturdier, easier to operate, and makes your valves last longer.

\* Patent Pending



BRONZE • IRON • STEEL

**LUNKENHEIMER**  
THE ONE *Great* NAME IN VALVES



WRITE FOR the name of your nearest Lunkenheimer distributor. He can show you samples of Lunkenheimer Valves with the new "Non-Slip" Handwheel. See them for yourself — test them. The Lunkenheimer Company, Box 360C, Cincinnati 14, Ohio.

When inquiring check CP 8028 on handy form, pgs. 2-3



# 4 "Grates"

For  
Executives  
and Engineers  
Responsible for  
Engineered  
Plant Services



## KLEMP Metal Gratings

- Protect against floor wastes
- Reinforce all concrete surfaces
- Insure fireproof, non-slip footing for men and traffic
- Insure efficiency with safety
- Insure protection, plus comfort through complete ventilation

The Klemm Metal Grating Corporation has been serving the needs of those men responsible for the safety of plant employees and the maintenance of all types of flooring for almost half a century. This includes stairways, stair treads, runways, catwalks and tower stairs in industries where there are flooring problems, such as chemical and gas plants, power stations, oil refineries, or where there are turbine rooms and pump rooms. During this time, Klemm has produced and patented several specialized gratings including Hexteel and Floorsteel.

Klemm's engineers have exclusively specialized in the fabrication of gratings such as Hexteel Surface Armor and Floorsteel Flexible Floor Armor for reinforcement of all surfaces where concrete or mastic are applied.

Klemm's diamond riveted and welded gratings are ideal for foot and plant material traffic wherever rugged strength is needed in structural footwalks, stair treads and open steel flooring.

We solicit the opportunity to let Klemm's engineers help solve your most difficult grating problems. Send in your blueprints for quotations today. All types of Klemm Gratings are available for immediate shipment.



We Tread the World with Safety

### KLEMP METAL GRATING CORPORATION

When inquiring check CP 8029 on handy form, pgs. 2-3

## CONSTRUCTION

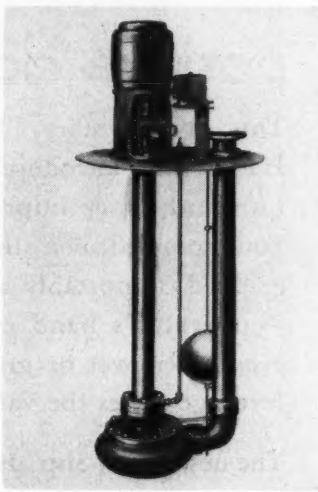
### Thrust bearing assembly feature of vertical sewage pumps . . .

dependable performance assured by precise construction

Among noteworthy features of line of vertical sewage pumps is the thrust bearing assembly. Ball bearing in assembly is grease lubricated and sealed against outside dirt. When grease cup is screwed down, new grease replaces old which is forced through a relief hole.

Coupling in lower half of thrust bearing assembly fits accurately into bore of a large capacity, angular contact radial and thrust ball bearing. Bearing assembly is mounted on the end of pump shaft directly under adjusting nut.

Guide bearing assembly is an accurately machined cast iron bearing housing with a full bearing flange between the column pipe



Sewage pump is constructed for heavy duty service

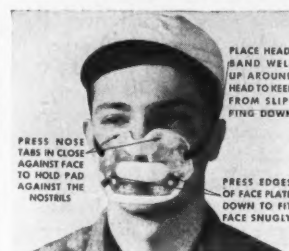
flanges. Impeller is an enclosed, 2-vane, non-clog type, adjustable vertically with shaft. Impeller is mounted on shaft with locking taper, woodruff key, and safety lock nut. Wearing rings snub any shock on the impeller and prolong life of pump.

Shaft is SAE 1040 steel with close tolerance and hard stainless sleeve through bottom guide bearing and motor support shaft seal assemblies. Shaft seal reduces possibility of vapors entering ball bearing coupling and motor.

Pumps have fluid ends in 2, 3,

## MARTINDALE

### PROTECTIVE MASKS



WEIGH less than 1/2 ounce  
Furnish excellent protection against many non-toxic dusts. Replaceable cotton pads are inexpensive and quickly changed.

Masks	.30 each
No. 1 Refills	.02 each
No. 2 Refills-heavy	.025 each
Quantity Discounts	
Less than \$10.00 List	10% Net
\$10.00 to \$24.99	10%
\$25.00 to \$99.99	15%
\$100.00 or over	20%
Minimum, charge or C.O.D.	\$2.00
Minimum, Cash with Order	\$1.00
If payment accompanies order we will pay delivery charges.	

Send for latest catalog of maintenance and production equipment.

### MARTINDALE ELECTRIC CO.

1358 HIRD AVE.

CLEVELAND 7, OHIO

When inquiring check CP 8030 on handy form, pgs. 2-3

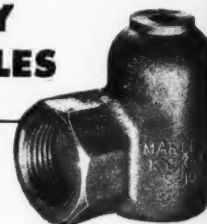
### For Maximum Break-up at Lowest Pressures...

## MARLEY NON-CLOGGING

### SPRAY NOZZLES

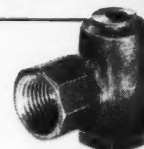
#### one-piece

designed for large capacity service.



#### two-piece

an all service nozzle that can be easily cleaned without removal from pipe.



#### atomizing

a real mist-maker that leaves no unbroken drops of water.



Marley nozzles are manufactured for the air conditioning, refrigeration and processing industries by the Marley Company, world's leading producer of water cooling equipment. Write today for Bulletin SN3-51.



### The Marley Company

Kansas City 5, Missouri

When inquiring check CP 8031 on handy form, pgs. 2-3

CHEMICAL PROCESSING

and 4" sizes designed to handle solids, 1½, 2, and 3" in diameter, respectively. Capacities range from 50 to 1000 gpm against heads up to 60 ft.

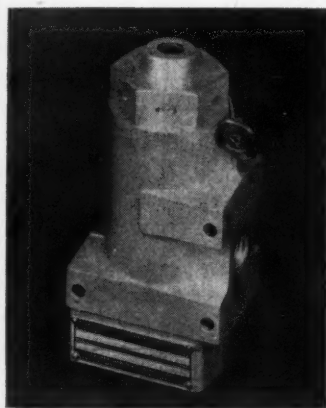
Units can be furnished with electric motors up to 20 hp or equipped for steam turbine drive. Motor mounting is designed with standard NEMA type "C" flange. An adapter flange can be furnished for other types of motor mounting brackets.

(Vertical Sewage Pumps are announced by The Deming Co., Dept. CP, Salem, Ohio . . . or for more information check CP 8032 on handy form, pages 2 and 3.)

#### Back pressure effects are eliminated in relief valve

Pressure relief valve of the cartridge type is said to be insensitive to back pressure or system pressure.

Valve, which makes possible self-positioning wing flap system in aircraft, is adaptable to many in-



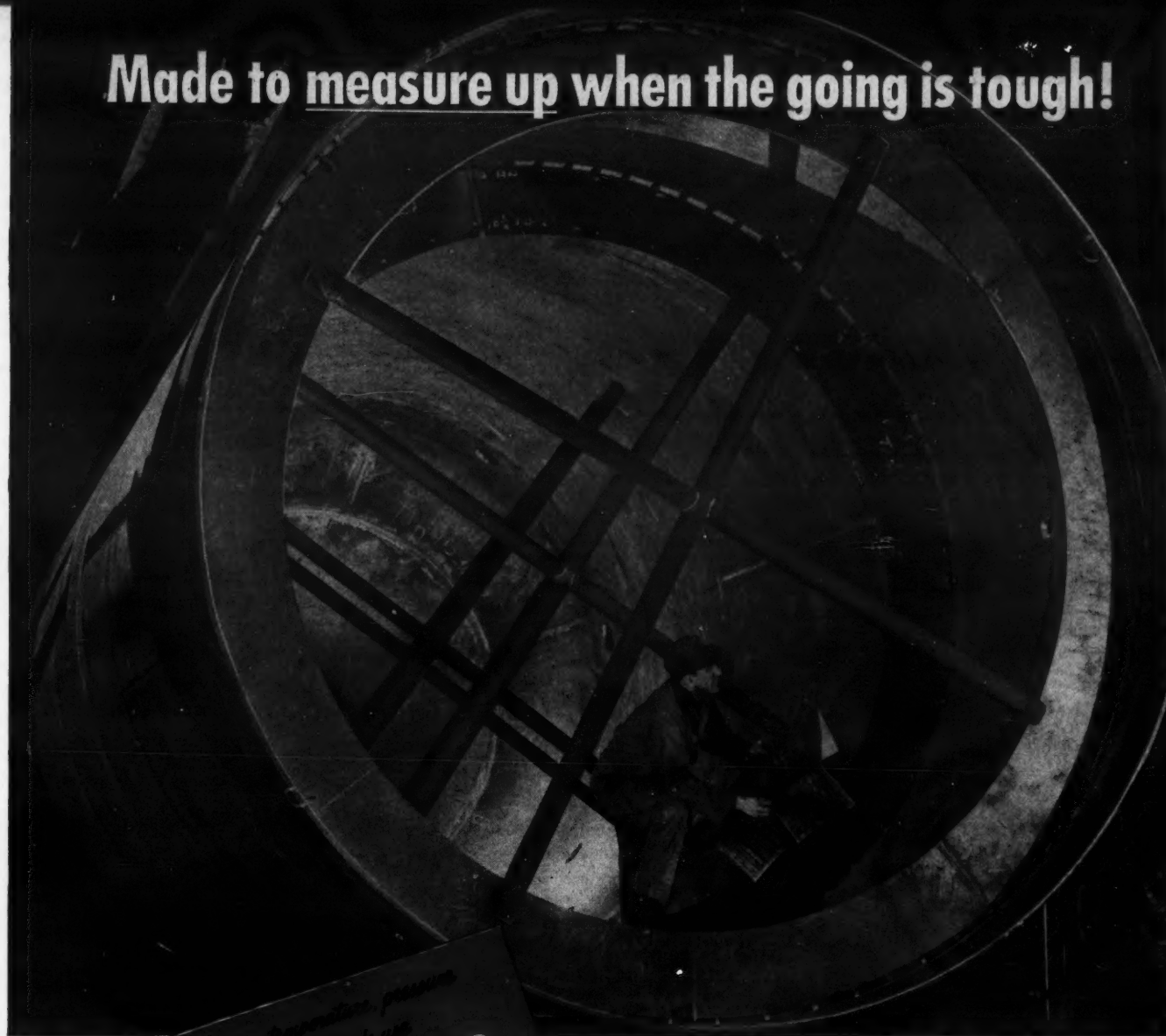
Pressure relief valve

dustrial uses. It is a modification of Pantex relief valve built under MIL-V-5523 specifications.

(Pressure relief valve is produced by Pantex Mfg. Co., Hydraulics Div., Dept. CP, Pawtucket, R. I. . . . or for more information check CP 8033 on handy form between pages two and three.)

For more information on product at right, specify CP 8034 . . . see information request blank between pages 2 and 3.

# Made to measure up when the going is tough!



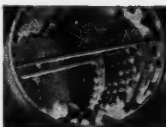
*To handle corrosives, pressures and chemicals etc.*  
**M. W. KELLOGG**

Large and small vessels for handling unusual corrosives . . . extremes in high and low temperature operations . . . high vacuum to high pressure—these are the vessels that refiners time after time "earmark" for Kellogg, because Kellogg-fabricated vessels measure up when the going is tough.

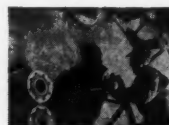
Pressure Vessels  
Vacuum Vessels  
Fractionating Columns  
Drums and Shells  
Heat Exchangers  
Process Piping  
Hi-pressure—Hi-temp  
Power Piping  
Bends and Headers  
Forged and  
Welded Fittings  
Radial Brick Chimneys  
Concrete Chimneys



Continuing Study of behavior of metals under stress at high temperatures has produced valuable design data.



Special Welding Techniques and stress relieving methods assure equipment performance even under severest operating conditions.



Shop Layout Craftsmen are fully experienced in vessel fabrication from nozzle positioning to "knockdown" fabrication for field assembly.



Rigid Quality Control, devised by specialists, including chemical and micro analyses as well as mechanical and non-destructive testing.



Extensive Facilities from bending of plate to final machining of precision surfaces permit complete fabrication under the same roof.

#### FOR OPERATORS IN WESTERN CANADA

The Canadian Kellogg Company Ltd. has established complete shop facilities for the fabrication of all types of piping at EDMONTON, Alberta. Inquire directly or through any Kellogg or Canadian Kellogg office.

Fabricated Products Division, The M. W. Kellogg Company  
New York, Jersey City, Los Angeles, Tulsa, Houston, Toronto, London, Paris





## NEWARK Metallic FILTER CLOTHS

**Weaves  
that  
STOP  
the Solids!**

Enlargements 4X

Here are five different weaves of Newark Metallic Filter Cloths. All different in the arrangement of the strands; hence different also in their functioning.

Study the shape of the solids in your solution being filtered. That's just as important as the size, if you want clarity of filtrate. Then write us fully about the solids and we'll be glad to recommend the weave of the cloth that will "stop" them.

Many malleable metals are still available so, if necessary, we can probably supply you with a material that will also withstand highly corrosive conditions. When writing, also give solution characteristics.

All Newark Filter Cloths are woven in our own plant, on our own looms, by our own skilled weavers.

Our entire line of Filter Cloths, Wire Mesh and Space Cloth, Sieves, "End-Shak" Testing Units and other Newark Products are described fully in our new Catalog D. Send for a copy.

## Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

Philadelphia 3, Penna. San Francisco, Calif. Chicago, Ill. New Orleans, La. Los Angeles, Calif. Houston, Texas  
1311 Widener Bldg. 3100 19th St. 20 N. Wacker Dr. 520 Maritime Bldg. 1400 So. Alameda St. P. O. Box 1970

When inquiring check CP 8035 on handy form, pgs. 2-3

## CONSTRUCTION

**Plenty of work room  
provided by tool  
grinder . . .**

unit runs with practically no vibration

**Uses:** For precision grinding.

**Features:** Ample wide open space is provided around each grinding wheel. This permits operator to work faster since his arm movements are never cramped. Wheel spindle is set forward on pedestal to provide even more room around



Optical protection while grinding is provided

grinding wheels. This offsetting of spindle also allows more toe room for operator standing at machine. In addition, wider set grinding wheels dispel sense of cramped work space associated with conventional grinders.

Design of motor mounting removes weight of grinding wheels from motor bearings. Grinding wheel spindle runs on sealed ball bearings. This construction is combined with fully enclosed V-belt drive to produce a quiet, vibration-free running condition.

**Description:** Since motor of tool grinder is mounted in pedestal, it is protected from abrasive dust. Large size water pot is removable for cleaning. Pushbutton motor switch is conveniently located at waist level. U-shaped tool rests are adjustable to any angle and also can be changed to compensate for wheel wear.

Optical protection is provided at each wheel by large eye shields. Operator need not raise shield to see what he is doing. Two con-

## Filpaco STAINLESS STEEL TANKS

SPECIAL • SINGLE SHELL • STANDARD

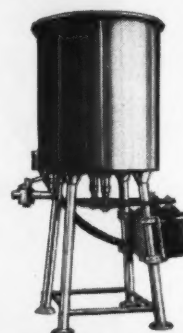
Designed and fabricated to your specifications . . . all shapes and sizes up to 2000 gal. capacity.

**Accessories:** Agitators, gauges, special covers, special fittings, cooling and heating coils.

Over 15 years' experience and latest fabricating equipment assures you of the right tank for the job.



Write us today concerning your problems. Your inquiries will receive immediate and personal attention by our engineers.



We also manufacture equipment for filtering, filling, mixing, conveying, as well as Filter Paper, Filter cloths and bags.

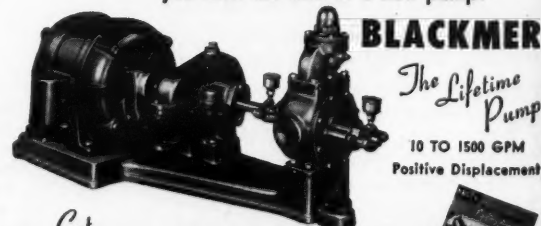


**FILPACO INDUSTRIES**  
The FILTER PAPER CO.  
2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 8036 on handy form, pgs. 2-3



● Blackmer Rotary Pumps are self-adjusting for wear. When the vanes finally wear out, change them, without disturbing piping or drive, and you save the cost of a new pump!



Get the facts

See how Blackmer Pumps handle light or viscous liquids efficiently—how they cut your pumping costs. Write for Bulletin 307

**BLACKMER**  
The Lifetime Pump  
10 TO 1500 GPM  
Positive Displacement

BLACKMER PUMP CO., GRAND RAPIDS, MICH.

When inquiring check CP 8037 on handy form, pgs. 2-3

CHEMICAL PROCESSING

cealed lights supply ample lighting. Extra thick wheel guard castings have large dust outlets which can be hooked into an exhaust system. Added operator protection is furnished by close-fitting spark guards within wheel guards.

Unit comes with either 8" grinding wheels and 1/2 hp motor or with 10" wheels and 3/4 hp motor. Compactly built, it measures 49 1/2" high, 18 1/2" wide, and 20 1/2" deep.

(Pedestal Tool Grinder is product of South Bend Lathe Works, 425 E. Madison St., South Bend 22, Ind. . . or for more information check CP 8038 on handy form, pages 2 and 3.)

**Flexibility, liquid-tight  
are features of  
conduit . . .**

oil, chemicals, dirt won't penetrate through wire protector

**Uses:** For protecting electrical wiring circuits.

**Features:** Flexibility of conduit permits quick installation, minimizes vibration between switch-control box and electrically-powered equipment. Close-contour wiring is also possible because of flexibility. Oil, grease, water, chemicals, dirt, corrosive fumes, abrasion can't get through water-tight housing.

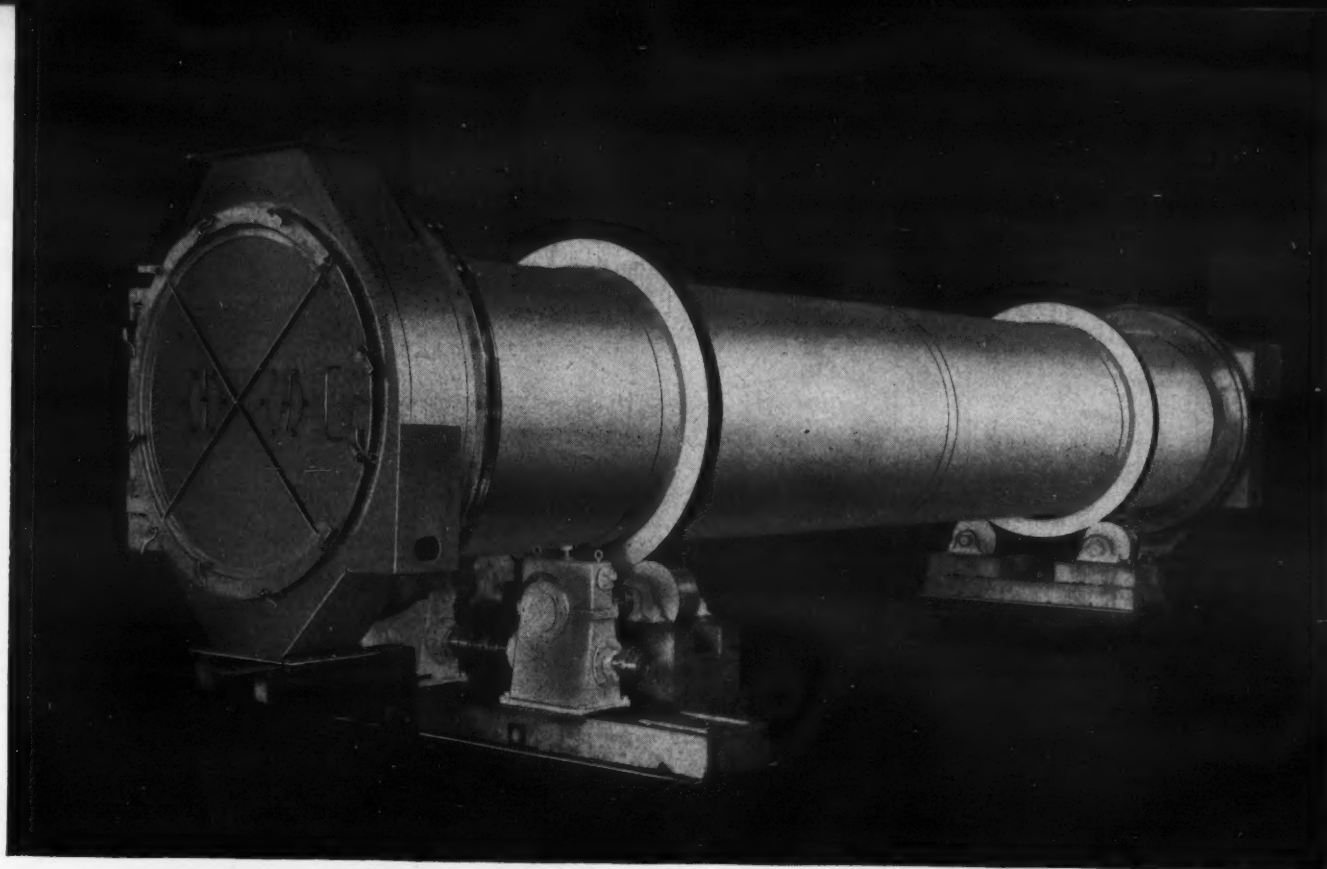
**Description:** Core of Sealrite Conduit is flexible galvanized steel tubing over which is extruded a liquid-tight synthetic jacket. In assembling, one grounding bushing is placed at each end of conduit to insure a positive ground between inner metal core and fitting. Bushing also makes it unnecessary to burr ends of the metal core.

As a safety feature, a synthetic gasket (optional) can be used between collar and the grip ring to complete seal at the fitting.

Standard color is black, but white and color are available. Nominal ID's run from 3/8 through 2 inches.

(Development of American Metal Hose Branch, American Brass Company, Dept. CP, 414 Meadow St., Waterbury 20, Conn. . . or for more information check CP 8039 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 8040 . . . see information request blank between pages 2 and 3. ➡

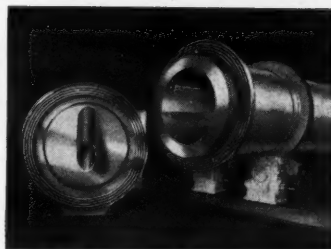


**stainless steel**

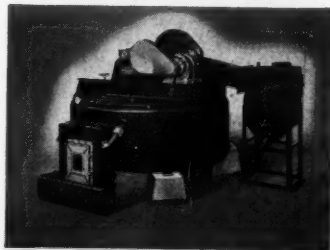
# Plastics Dryer

**prevents product contamination**

● Fabricated entirely of stainless steel, the 60" x 32' 0" dryer pictured above, is probably one of the most costly direct heat rotary dryers ever built. The entire interior, including the flights, is polished to a mirror-like finish, and is easily accessible for cleaning. Feed and discharge breechings and inspection doors are also of stainless steel polished on the inside. Air used in drying is filtered and the discharged air is passed through a special high efficiency dust collector, of stainless steel construction. Fabricated in our extensive machine and structural shops this dryer, built to prevent contamination and spoilage between different batches—and colors—of a well known plastic, reflects the ability of Bartlett-Snow to meet fully the requirements of even the most exacting heat engineering problems.



Labyrinth Seal on 60" x 32' 0" Stainless Steel Plastics Dryer showing the Mirror-like Finish on the Shell and Flights.



Special Steam Jacketed Batch Dryer showing Dustless Discharge to Screw Conveyor and Condenser where Fines are Reclaimed from Vapors.

DESIGNERS

ENGINEERS

**BARTLETT  
-SNOW**  
CLEVELAND 5, OHIO

FABRICATORS

ERECTORS

*Dryers • Coolers • Calciners • Kilns*  
"Builders of Equipment for People You Know"

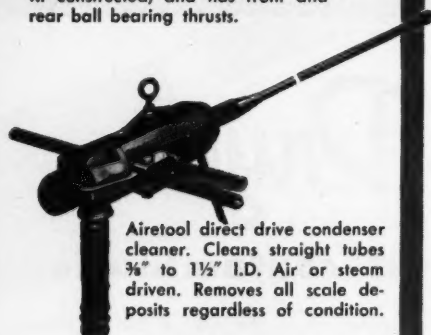


"LET'S CUT DOWN  
LEAKY JOINTS  
AND CLEAN THOSE  
SCALED TUBES!"

"RIGHT-WE'LL  
USE AIRETOOL  
EQUIPMENT."



Airetool ball bearing motor with single expansion cutter head for cleaning straight tubes. Motor is slip-fit constructed, and has front and rear ball bearing thrusts.



Airetool direct drive condenser cleaner. Cleans straight tubes  $\frac{3}{8}$ " to  $1\frac{1}{2}$ " I.D. Air or steam driven. Removes all scale deposits regardless of condition.



Airetool Tube Expansion Control System automatically, accurately rolls tube joints. Eliminates danger of over or under expansion. For field, shop or new work.

BRANCH OFFICES: New York • Chicago  
Philadelphia • Houston • Tulsa • Baton  
Rouge • Hudson Heights (N.J.)  
REPRESENTATIVES in principal cities in U.S.A.,  
Canada, Mexico, South America

Scaled tubes and leaky tube joints cut capacity, increase operating costs. AIRETOOL tube cleaners and tube expanders keep tubes at peak efficiency, reduce down-time due to tube failures. Powerful, high speed cleaners quickly and thoroughly remove even the hardest deposits from straight or curved tubes. Tight, leak-proof tube joints can be assured everytime, when they are rolled automatically, accurately, with the unique AIRETOOL Tube Expansion Control System.

You'll have an improved tube maintenance program and better tube efficiency if you specify AIRETOOL tube cleaning and tube expanding equipment. Do it today. Literature upon request.

There's an Airetool  
Tube Cleaner and  
Tube Expander For  
Every Type of  
Tubular Construction.

**AIRETOOL**

MANUFACTURING COMPANY

SPRINGFIELD, OHIO

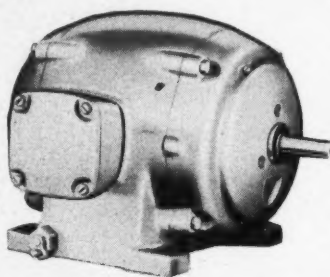
## CONSTRUCTION

**Totally-enclosed motor  
is easily cleaned,  
self cooling . . .**

drain plug eliminates ground-  
ing caused by condensation

**Uses:** In addition to Under-  
writers' Laboratories approval for  
explosion-proof service, motor  
may be installed where dampness,  
dust, and corrosive fumes are  
present.

**Features:** Grounding of motor  
caused by "breathing" (condensa-  
tion) under certain conditions is



Motor has UL approval for ex-  
plosion-proof service

eliminated. Drain plug releases  
water from interior but motor  
still retains its explosion-proof  
characteristics. Construction and  
design features result in longer,  
tougher service.

**Description:** Self-cooling con-  
struction of type SS totally-enclosed  
motor eliminates use of exterior  
fans and heat-dissipating fins.  
Smooth exterior lends itself to  
wiping off or hosing, and slinger  
is attached to protect output shaft  
bearing from entrance of dirt or  
water.

Type SS and SES share these  
construction characteristics: 1) sealed terminal chamber, 2) asbestos-protected windings, 3) solid centricast rotor, and 4) Lubriflush bearings to provide large lubricant chamber and provision for forcing grease through bearing for thorough purge of old grease. Motors are available in 1/3 to 2 hp range (fan-cooled to 75 hp), and will be available in larger ratings according to the manufacturer.

(Products of U. S. Electrical Motors Inc., Dept. CP, Box 2058, Terminal Annex, Los Angeles 54, California. . . or reader may secure more information about this product by simply checking CP 8042 on convenient Reader Service slip between pages two and three.)

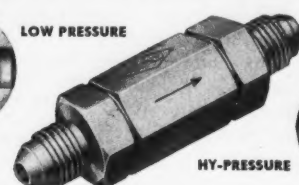
## REPUBLIC

# VALVES

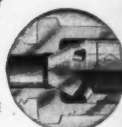
INDUSTRIAL • CHEMICAL • AIRCRAFT



LOW PRESSURE



HIGH-PRESSURE



Check Valves are sturdily built for either 500 psi or 3,000 psi hydraulic service—brass, aluminum alloy, steel, and stainless steel. Pipe, or AN or J.I.C. tube ends, or combinations. Sizes  $\frac{1}{8}$ " to 1".

Manufacturers also of high quality globe, needle, relief, and 2, 3, and 4-way plug valves, and special valves to specifications.

Write for complete catalog and name of nearest distributor.

84

CHECK



RELIEF



PLUG



GLOBE



NEEDLE



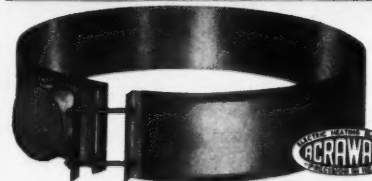
REPUBLIC MANUFACTURING CO.

1930 WEST 77TH STREET • CLEVELAND 2, OHIO

When inquiring check CP 8043 on handy form, pgs. 2-3

**SPEED UP**  
SLOW-FLOW MATERIALS

TARS  
PLASTICIZERS  
WAXES  
MOLASSES  
GLUES  
RESINS  
GREASES  
GUMS . . ETC.



**ACRAWATT ELECTRIC  
DRUM HEATERS**  
FIT ALL STANDARD 22 $\frac{1}{4}$ " DRUMS



- Proven Acrawatt THINSTRIP Construction.
- 3 Heats: 3000 Watts 230 Volts.
- Fast Heat Transfer.
- Aluminized Steel Encased.
- Enclosed Wiring Terminals.
- Low Radiant Loss.
- Fully Insulated.
- Easy to Install and Remove.

Kill time-consuming, costly slow-flow of viscous materials. Slip one or more Acrawatt Drum Heaters on your drums. Make cloggy, sluggish contents get a move on. Go on and off in a jiffy. Safe and simple to apply and operate. Use singly or in multiple. Save with Acrawatt reliability, long life ruggedness and efficiency. Order today.

**ORDER NOW**  
E.A. **\$19.50**  
F.O.B. CHICAGO  
Spot Shipment  
Shipping Wgt 10 Lbs

FOR BETTER ELECTRIC HEATERS  
AT BETTER PRICES, LET US QUOTE

**ACRA INDUSTRIAL ELECTRIC CO.**

9909 PACIFIC AVENUE, FRANKLIN PARK, ILLINOIS

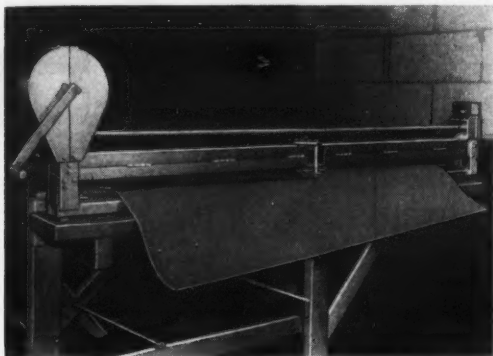
When inquiring check CP 8044 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 8041 on handy form, pgs. 2-3

**Makes fast work out of cutting packaging materials . . .**

hand-operated cutter is simple and sturdy  
**Uses:** Designed for use in package engineering or planning departments, packing line, shipping room, and in sampling. Among materials it can cut are cellulose wadding, corrugated "V" board, fibre-



Unit has interchangeable cutting wheels for cutting, perforating and scoring

board, chipboard, cushioning materials, and reinforced (waterproof) simulated leather. Also included are gasket materials, excelsior pads, rubber matting, linoleum, and many other hard-to-cut materials.

**Features:** Unit is said to make fast, easy work out of cutting packaging materials and eliminating old-fashioned methods. Cutter, which is hand-operated, is simple and sturdy in construction. It has interchangeable cutting wheels for cutting, perforating, and scoring operations.

**Description:** Cutter is operated by pulling cutting wheel across stock, which is firmly gripped by a spring bar. Materials in 12 to 48" widths can be accommodated. For widths greater than 48" to be cut or perforated, a crank-driven model is available. It can be mounted on wall, bench, floor, portable carriage, or in other locations.

(The Fibrecutter is marketed by Fibleco Illinois Corp., Dept. CP, 311 N. Desplaines St., Chicago 6, Ill. . . or for more information check CP 8045 on handy form, pages 2 and 3.)

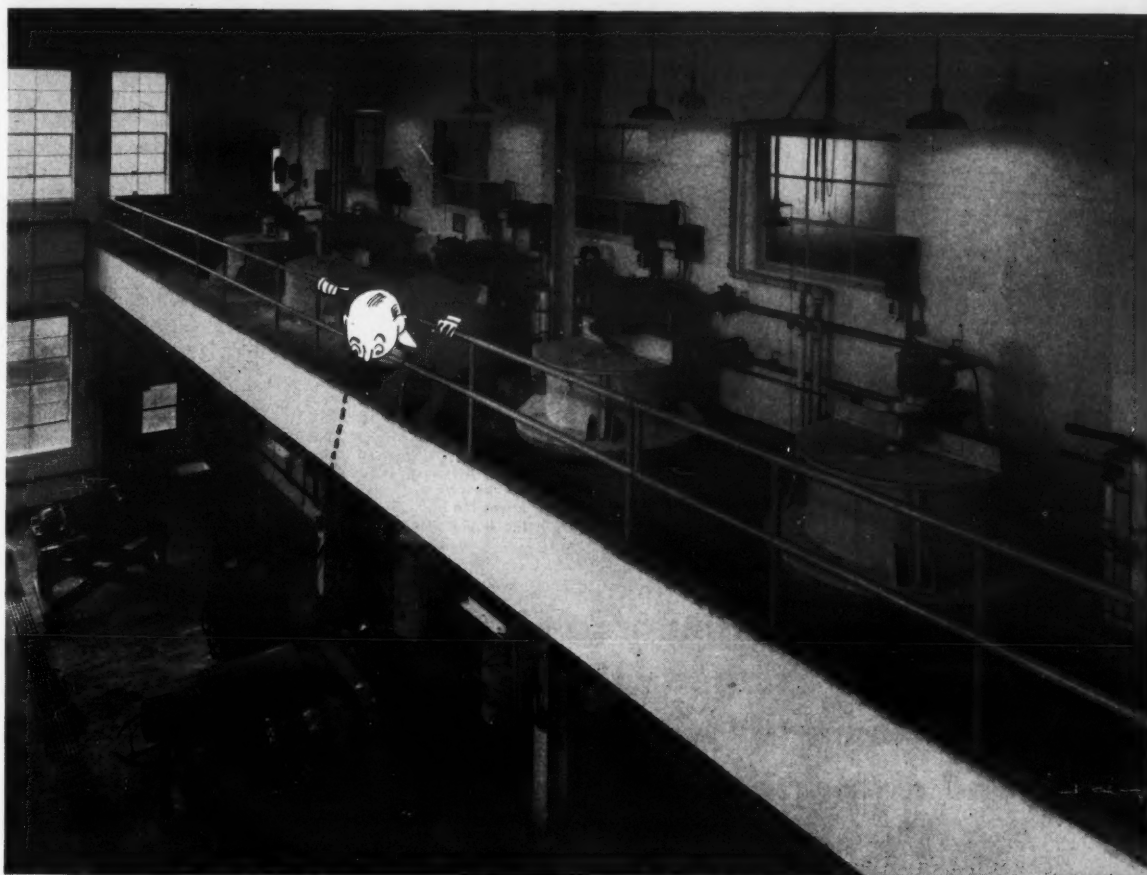
**Specifications of tubes and welding fittings**

Comprehensive 12-page bulletin presents specifications and selection data on seamless and mechanical steel tubes, seamless and welded stainless steel tubes, and stainless and carbon steel welding fittings. Advantages, specifications, special applications, physical properties, finishes, sizes and tolerances, and other informative data are given for each product.

Bul 103-Z is issued by Globe Steel Tubes Co., Dept. CP, 3839 W. Burnham St., Milwaukee 46, Wis. When inquiring specify CP 8046 on handy form, pages 2 and 3.

# PUT YOURSELF IN HIS PLACE

**to be sure of the right answers  
 on your particular filtering operation**



The Bird Research and Development Center, a portion of which is pictured here, is set up and staffed for one purpose only — to help you get the right answers in advance of any investment in filtration equipment to such questions as these:

how good a separating job can I expect with my kind of feed slurries and my types and sizes of solids?

what capacity per Filter can I expect?

how good a wash can I get?

how much floor space will it take?

what auxiliary equipment, if any, will be needed? (Bird Filters require no filter cloths or media, no vacuum, no auxiliaries)

what will the right Filter cost to buy, install, operate and maintain?

Why not take advantage of the knowledge, experience and facilities concentrated in this Bird Research and Development Center to get whatever filtration facts you need. Test findings will be unbiased because Bird builds such a wide range of filtration equipment.

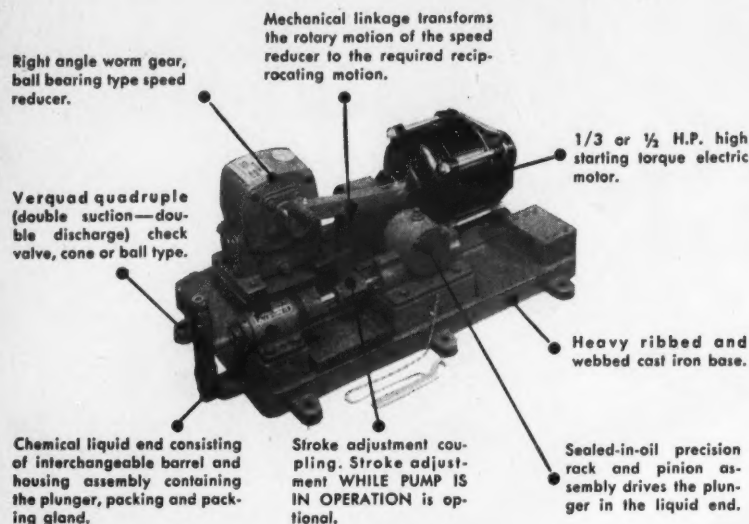
**BIRD MACHINE CO.**  
**South Walpole**  
**Massachusetts**

Builders of the Bird Continuous Solid Bowl Centrifugal Filter • the Bird Screen Type Centrifugal Filter • the Bird Centrifugal Classifier • the Bird Suspended Batch Type Centrifugal • the Bird-Young Continuous Vacuum Filter.

When inquiring check CP 8047 on handy form, pgs. 2-3



# Simplicity of design plus precision manufacture



## assure high standards of accuracy and dependability in Hills-McCanna "U" type metering and proportioning pumps

Whenever small volume flows must be metered or proportioned continuously, the simple, foolproof design of Hills-McCanna "U" Type Pumps pays big dividends. For flows up to 24 gallons per hour per feed, its accuracy and reliability suit it for research, pilot plant operation and full scale processing alike.

The "U" type pump is available in a range of capacities with 1, 2, 3 or 4 feeds. Its design permits use of a wide variety of materials of construction in the liquid end.

Write for descriptive literature which gives full information. HILLS-McCANN CO., 2370 W. Nelson Street, Chicago 18, Ill.

# HILLS-McCANN

*metering and proportioning pumps*

Also Manufacturers of:

SAUNDERS TYPE DIAPHRAGM VALVES  
FORCE FEED LUBRICATORS • MAGNESIUM SAND ALLOY CASTINGS

When inquiring check CP 8048 on handy form, pgs. 2-3

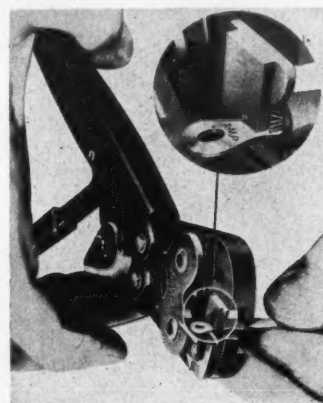
## CONSTRUCTION

**Wires with thin insulation are accurately crimped to solderless terminals . . .**

wire positioner on hand tool solves problem

**Uses:** For crimping solderless terminals to wires having extremely thin insulation.

**Features:** Wires with thin insulation are difficult to terminate. Unless a worker exercises great care, he is quite likely to force both wire and insulation into terminal



Crimping tool in action. Function of positioners is indicated in insert view

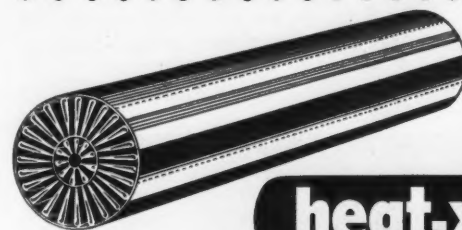
barrel. Hand tool is reported to provide an easy and accurate means of performing operation.

**Description:** Hand crimping tool terminates wires with thin insulation sheathing such as Delta-boston, Type SI-57360, and Neolay. Shur-Stop wire positioner incorporated in unit stops stripped wire in its proper place and prevents insulation from being inserted in the terminal barrel. Spring-loaded handles are self-opening, allow more control for crimping.

Tool also has two other positioners which help to produce terminations on the Deltaboston-type wires. Guide orients terminal correctly in tool jaws. Barrel-stop positions terminal at the proper crimping area.

(Amp Certi-Crimp hand tool is announced by Aircraft-Marine Products, Inc., Department CP, 2100 Paxton Street, Harrisburg, Pennsylvania . . . or reader may secure more information about this product by simply checking CP 8049 on handy Reader Service slip between pages-two and three.)

**INNER-FINNED TUBING FOR HIGH CAPACITY... LOW PRESSURE DROP**



**heat-x**

HEAT-X inner-finned tubing combines maximum heat transfer with minimum pressure drop.

Large amount of transfer surface compressed into small area provides compactness . . . saves space.

Applicable to problems involving heat transfer of nearly all liquids and gases.

Request free bulletin.



**THE HEAT-X-CHANGER CO., Inc.**  
BREWSTER - NEW YORK

When inquiring check CP 8050 on handy form, pgs. 2-3

## Open Or Close Instantly Stay Leak-Tight

**WRITE  
FOR  
BULLETIN**

These sturdy, lever-operated gate valves provide full pipe size straight-through flow or instant drop-tight seal with a single seventy-degree turn of the operating wrench. Do not jam or stick. Retain their tight seal because self-grinding, self-compensating. Widely used for outlets and emergency shut-off on lines handling water, air, steam, gas, oil, tar, gasoline, acids and other fluids. Write for descriptive bulletin.



EVERLASTING VALVE COMPANY, 49 Fisk Street, Jersey City 5, N. J.  
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

EV-361

## Everlasting Valves

*for everlasting protection*

When inquiring check CP 8051 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Non-slip coating gives traction over treacherous surfaces . . .**

available in three colors, paint is applied by brush to any type of surface

**Uses:** To provide good traction on slippery floors, truck beds, catwalks, fire escapes, etc.

**Features:** Paint will not be deteriorated by outside weather conditions and will remain slip-proof in rain or slush.

**Description:** Non-slip paint contains abrasive material to provide the traction and it resists oils, greases, detergents, and mild solutions of acids and alkalis. According to manufacturer, coating is applied by brush and dries quickly on any type of surface including rough or smooth concrete, wood, rubber, and marble. Grey, tile red, and black are standard colors available in quart, gallon, and five gallon containers.

(Product of Oil-Dri Corporation of America, Dept. CP, 520 N. Michigan Ave., Chicago 11, Ill. . . . or for more information check CP 8052 on handy form, pages 2 and 3.)

**Colorful bulletin reviews features of multi-purpose processing vats**

Two-color, twelve-page bulletin illustrates construction features and advantages of heavy duty, multi-purpose processing vats which are fabricated so that all product surfaces are of stainless steel. Available in capacities of 300 to 100 gal, units are designed for heating, pasteurizing, mixing, setting, and blending of heavy-bodied liquid products as well as for refrigerated storage. Complete line of units features models which are designed to meet specific processing conditions — with long sweep propeller-type agitator or scraper blade agitator, painted or stainless steel finish, steam or hot water heating, water cooling or direct expansion cooling.

Bul G-472 is issued by Cherry-Burrell Corp., Dept. CP, 427 W. Randolph St., Chicago 6, Ill. When inquiring specify CP 8053, pgs. 2 & 3.

**Self-contained unit delivers up to 2.5 million Btu/hr over large area**

Industrial heaters which may be mounted on floor, ceiling, or wall (upright or inverted) can supply from 100,000 to 2.5 million Btu/hr to heat large areas not suitable to conventional heating methods. The 2000 to 25,000 cfm in air velocity may be utilized in heating plants or mills in the steel, rubber, paper, and other industries. Accessory items include filter boxes for built-in mechanical air cleaning and air-mixing boxes for controlled mixing of fresh and recirculated air.

(Heaters are products of Sturtevant Div., Westinghouse Electric Corp., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. . . . or for more information check CP 8054 on handy form, pages 2-3.)

# Trouble Free Starters

for the

## CHEMICAL and PROCESS INDUSTRIES

*Typical Starters*



**Synchronous Starter**



**Bulletin 742  
Reduced Voltage Starter**



**High Voltage Starter**



**Bulletin 709  
Across-the-line Starter**



**Bulletin 798  
Control Center**



**Quality**



**WAX PLANT**



**PETROLEUM INDUSTRY**



**BREWERY**



**BAKERY**



**SOYBEAN PROCESSING PLANT**



**DAIRY**

In every industry, wherever you find outstanding industrial equipment, you will discover reliable Allen-Bradley motor starters. Their simple design and rugged construction guarantee millions of trouble free operations. Furthermore, their double break, silver alloy contacts require no maintenance. Dependable overload relays are easily reset. A wide line of safe enclosures is available to meet every industrial need. Consult with Allen-Bradley. Allen-Bradley Co., 1315 S. First St., Milwaukee 4, Wis.

# ALLEN-BRADLEY

## SOLENOID MOTOR CONTROL

QUALITY

When inquiring check CP 8055 on handy form, pgs. 2-3



# Hanna Fluid Power Cylinders

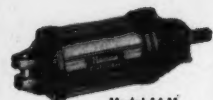
SMOOTH, DEPENDABLE POWER  
FOR 1001 APPLICATIONS



Model 4 M



Model 10 M



Model 14 M



Model 16 M



Model 17 M



Model 18 M



Model HP 4



Model HP 10



Model HP 14



Model HP 16 A



Model HP 17



Model HP 18

## Pneumatic and Hydraulic

There are standard model Hanna Cylinders for many ideal applications in your plant and in the machines and equipment you design and build. You'll find that they simplify and improve practically all types of machine control and actuation by eliminating a vast assortment of miscellaneous cams, cranks, screws, levers, etc. Hanna Cylinders operate efficiently and economically to provide the push, pull or lift movements required for the operation.

## ... High and Low Pressure

Hanna Cylinders are available in a selection of sizes, types and mounting styles to meet your exacting requirements. They are designed for operation by air, oil or water and for pressures up to 1500 psi.

There are thousands of Hanna Cylinders now at work throughout industry providing smooth, economical, dependable power for hundreds of applications. It will pay you to find out how Hanna Cylinders can help improve production and machine operation in your plant.

## FREE! "27 Ways to Use Cylinder Power" Send for the New "Cylinder Power in Action" Bulletin!

Bulletin 255 shows you 27 ways you can put cylinder power to work for you. Simple diagrams show 15 different cylinder movements that can make cylinders push, pull, lift, press, clamp or control. 21 actual application photographs show how Hanna Hydraulic and Pneumatic Cylinders are being used throughout industry to simplify and speed up power motion problems. Write for your copy today—there is no obligation.

**Hanna Engineering Works**

HYDRAULIC AND PNEUMATIC EQUIPMENT ... CYLINDERS ... VALVES ... RIVETERS

1744 ELSTON AVENUE, CHICAGO 22, ILLINOIS

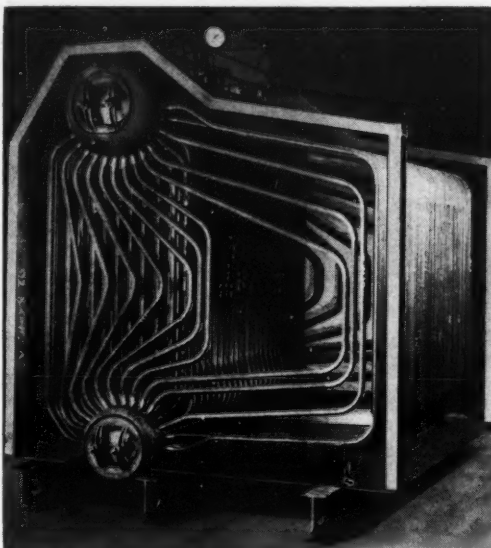
## CONSTRUCTION & MAINTENANCE

**Heavy peak and fluctuating loads  
easily handled by packaged  
water tube boilers . . .**

feature water cooled furnace with shielded combustion furnace

**Uses:** To meet many present day requirements for steam and high temperature water in the chemical processing industry.

**Features:** Large water capacity gives the boilers exceptional ability in handling heavy peak and fluctuating loads. Sizes range from 7500 to 30,000 lb of steam per hour (or equivalent water ratings) in design pressures of 200, 300, 600, and 900 psig. All are of a 2-drum, bent tube design featuring a



View of boiler before enclosure with gas tight steel jacket, showing arrangement of drums and tubes

water cooled furnace in which tangent water tubes completely shield the full length combustion chamber. Provision for superheat up to 200°F is available as auxiliary equipment.

**Description:** Standard line of package type water tube boilers are fired by oil or gas or by combination burners. Units are offered with complete burner and control assembly or boiler can be obtained separately. This enables customer to select type of burners and controls desired.

Boilers are enclosed in a gas tight insulated steel jacket of sectional design. They are suitable for outdoor or indoor installations. Normally, units are shipped assembled ready for use after making fuel line, water, steam, and electrical connections. However, when necessitated by limited wall openings, sectional casing and parts permit field assembly with minimum labor. This eliminates expense of tearing down building walls to gain access to inside locations.

Completely assembled units can readily be moved from one location to another, making them practical for temporary and emergency installations. Single or multiple units give a wide range of capacity with minimum space requirements. No special founda-

for *Low*  
**VACUUM PUMP  
MAINTENANCE  
COSTS and BETTER  
VACUUM . . .**

*it's the*

**HILCO OIL RECLAIMER**

**VACUUM  
for PUMP  
USERS . .**



Oil Reclaimer

**A** simple, economical and efficient method of restoring contaminated lubricating and sealing oil to the full value of NEW OIL. The HILCO will produce and maintain oil free of solids, gums, water and gases in a continuous, all-electric, automatic operation.

Be SURE of clean oil in your  
**HIGH VACUUM PUMPS**

**HILCO  
OIL RECLAIMER  
SYSTEMS . .**

• WRITE FOR COMPLETE DETAILS  
IN THE FREE BULLETIN

Recommendations at no Obligations

**HILCO CORPORATION**  
DIVISION

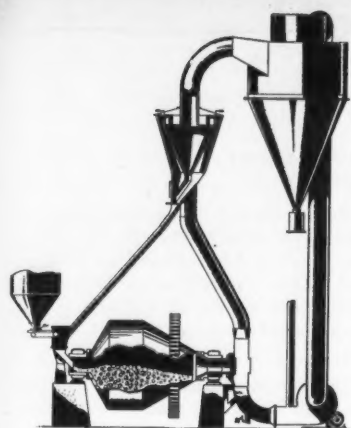
58 W. Fourth St., Elmira, N. Y.

IN CANADA — UPTON - BRADEEN - JAMES, Ltd.  
990 Bay St., Toronto, 3464 Park Ave., Montreal

When inquiring check CP 8057  
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 8056 on handy form, pgs. 2-3



### AIR CLASSIFYING SYSTEMS

Dry grinding is easy when you use a Hardinge Mill and Air Classifier. With the Loop Classifier arrangement a product varying from 20 mesh to 98% passing 200 mesh can be obtained. With a Hardinge Superfine Classifier (illustrated), a 99½% passing 325 mesh product is obtainable.

The Hardinge Conical Mill is illustrated; Hardinge also makes Tricone, Tube and Rod Mills, for continuous grinding applications.

Write for Bulletin 17-B-13, stating your grinding problem.

**HARDINGE**  
COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works  
NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • MINNEAPOLIS • TORONTO 1  
121 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 700 Bay St.

When inquiring check CP 8058  
on handy form, pgs. 2-3

## CONSTRUCTION & MAINTENANCE

tions are needed since assembly is built upon a rigid steel frame base.

Where boilers are used as first stage forced circulation units for high pressure, high temperature water systems, the design includes provision in boiler drums to permit natural circulation through the furnace heat absorbing tubes. This is of value in the event that high pressure circulatory pumps or lines accidentally fail to return any or all of the system water to the boiler.

(Announcement by Springfield Boiler Co., Dept. CP, 1903 E. Capitol Ave., Springfield, Ill. . . . or for more information check CP 8059 on handy form, pages 2 and 3.)

### Unshielded thermocouples permit rapid temperature response

Low mass of unshielded (bare wire) thermocouples results in very rapid response to temperature changes, and therefore greater accuracy of measurement and control than possible by any other method of temperature sensing. Thermocouple glands provide practical method for sealing unshielded thermocouples in any chamber operating above or below atmospheric pressures.

Depending upon type of sealant employed in fabrication of gland, units may be used at temperatures ranging from ambient to over 1500°F. Glands sealed with powdered talc (chemically inert magnesium silicate) may be used from full vacuum to 1000 psi with temperatures as high as 1500°F. When a plastic sealant is used, test pressures as high as 15,000 psi may be attained within the temperature range of the plastic.

Description of units and construction, principle of sealing, specifications, and suggested applications are outlined in 4-page bulletin. Bul TC-1 is issued by Conax Corp., Dept. CP, 4515 Main St., Buffalo 21, N. Y. When inquiring specify CP 8060 on handy Reader Service slip, between pages 2 and 3.

### Masonry coating cleans itself, plus sealing surface against moisture penetration

Synthetic rubber resin base coating, known as Cementkote, is intended for outside application on cement, stucco, brick, or stone. This self-cleaning paint will, reportedly, seal masonry surfaces against moisture penetration and cover without streaking, yellow spots, or burns.

Manufacturer's pigmented primer enables fresh plaster to be primed, sealed, and finish painted in one day. A chemical resistant enamel is also included in this line of rubber-base products to counteract deteriorating effects of grease, oils, chemicals, and other corrosive agents.

(Product of The Tropical Paint & Oil Co., Dept. CP, 1210-52 W. 70th St., Cleveland 2, Ohio . . . or for more information check CP 8061 on handy form, pages 2 and 3.)

## Automatic sight feed lubricator for pressure service



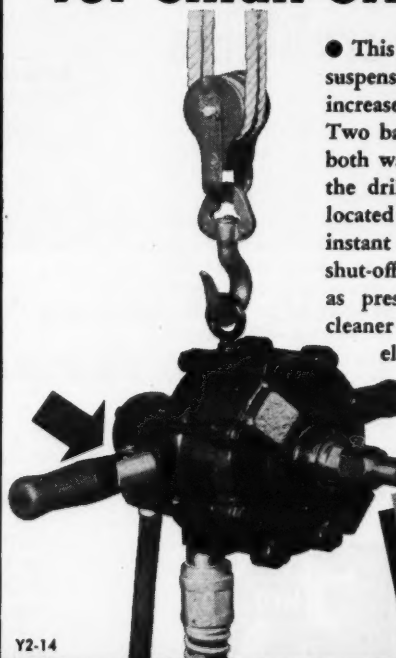
● On-and-off control is entirely automatic—when pressure is on, lubrication starts. When pressure is shut off, lubrication stops. No valve to operate—or to forget. When operating the oil flow remains constant, and is accurately regulated by a knurled cap. Knurled filler plug is easily made tight by hand. No tools needed. Here is ideal lubrication

for tube cleaners, soot blowers, or other steam or air-driven equipment. Details sent on request.

**ELLIOTT**  
pressure type  
LUBRICATOR

## Trigger-controlled cleaner for small straight tubes

● This is the tried and proven Lagonda suspension type cleaner, redesigned for increased power and instant control. Two ball-type bearings, handling thrust both ways, let all the power through to the drill or cutter. Controlling trigger located at the base of the handle gives instant regulation from wide open to shut-off. It controls water supply as well as pressure. The air or steam-driven cleaner is illustrated. Also available with electric motor drive, with similar convenient control. Bulletin sent on request.



**LAGONDA**  
suspension type  
CLEANER

Y2-14

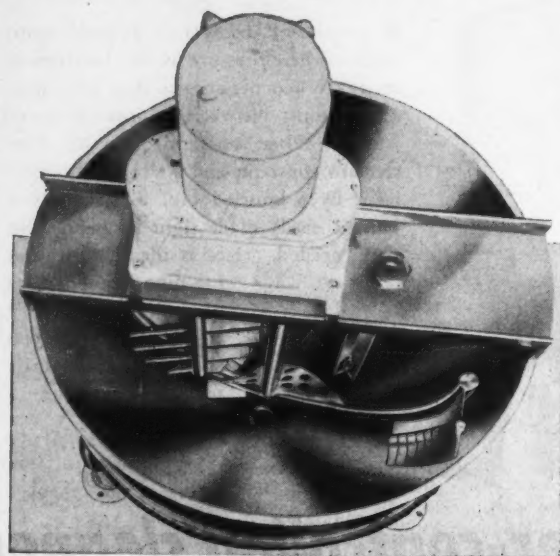


**ELLIOTT COMPANY**  
LAGONDA DIVISION • SPRINGFIELD, OHIO  
Plants at: Jeannette, Pa. • Ridgway, Pa. • Ampere, N. J. • Springfield, O. • Newark, N. J.  
DISTRICT OFFICES IN PRINCIPAL CITIES

When inquiring check CP 8062 on handy form, pgs. 2-3



# You can borrow this Agitator Kettle...



to test it on *Your*  
processing problems

MODEL TA-RA  
**GROEN**  
STAINLESS STEEL  
STEAM-JACKETED  
VARIABLE  
SPEED  
AGITATOR  
KETTLE

with  
GROEN EXTRA-FAST  
ROTA-THERM  
JACKET

**GROEN** MFG. CO.

4533 W. Armitage Ave., CHICAGO 39, ILL.  
30 CHURCH ST. (HALF A CENTURY OF FINE KETTLES) 420 MARKET ST. SAN FRANCISCO 11  
NEW YORK 7

Why guess when you buy mixing equipment? Test first . . . and be sure! Borrow this GROEN Agitator Kettle for a reasonable time AT NO COST (except freight from and to Chicago or next destination). Then experiment on your own processing. Learn exactly what speeds are required and what agitator parts are necessary to do your work perfectly. The unit has variable speed drive . . . extra-high speed Rota-Therm steam jacket . . . and parts for every kind of mixing from violent whipping to simple stirring scraping or swirling actions. Use them all . . . use them separately . . . and learn definitely what you need. It's a great plan. Write today for details.

## Summarizes 310 reports from government labs

Research reports from laboratories of the Federal Government and from cooperating state and foreign governments are summarized in bulletin. Technical field covered by reports includes chemicals and allied products, electrical machinery and electronics, fuels and lubricants, instruments, metals and metal working products, minerals and mineral products, physics, structural engineering, and textiles.

Featured are summaries of reports on: use of graphs to determine elasticity of textiles, oxidation inhibiting oils and greases, simple and rapid technique for measuring gas in aluminum melts, appraisal of the value of titanium metal and titanium-base alloys as materials of construction, dielectric amplifiers, lightweight wave guides, and automatic printed circuit techniques. Bulletin also includes list of German patent applications on electrical developments (for years 1930-1945) brought over by Allied intelligence teams after World War II.

To obtain Nov 1952 issue of "Bibliography of Technical Reports" remit check or money order (payable to Treasurer of the United States) for 50 cents direct to Office of Technical Services, United States Department of Commerce, Washington 25, D.C.

## Bulletin discusses nine types of industrial insulation

Insulating and finishing cements, fill materials (diatomaceous earth), Fireproofing cement, flat materials (blocks and blankets), anti-condensation compound, pipe coverings, fill materials, flat materials (felts), and protective coverings are described in 12-page bulletin.

Specifications, features and performance data are included for each product. Bul A-91 is issued by The Eagle-Picher Co., Dept. CP, American Bldg., Cincinnati 1, Ohio. When inquiring specify CP 8064 on handy form, pages 2 and 3.

## Comprehensive catalog lists over 1000 compounds

Ten-page catalog gives alphabetical listing for over 1000 special, rare, and reagent chemicals. Bulletin also includes description of special titration flask which allows easier detection of end-points during titrations with various reagents. In addition, various standard solutions, Karl Fischer Reagent, and Hersberg stirrers are listed.

Catalog of chemical reagents and apparatus is issued by Jasonols Chemical Corp., Dept. CP, 1085-87 Myrtle Ave., Brooklyn 6, N. Y. When inquiring specify CP 8065 on form, pgs. 2-3.

## Informative article traces history of rubber

Illustrated bulletin contains 7-page article which traces the history of rubber from its discovery through its commercial development to present day synthetics. Facts are given about several of the synthetics, and details of processing operations for both synthetics and natural rubber are outlined.

In addition, bulletin contains articles dealing with application of large AC motors to rubber mill drives, reclamation of rubber, maintenance of large electric motors and controls in rubber mills, and cage windings. Drawings, sectional views, and diagrams supplement the text.

"E-M Synchronizer No. 37" is issued by Electric Machinery Mfg. Co., Dept. CP, Minneapolis 13, Minn. When inquiring specify CP 8066 on handy form, pages 2 and 3.

## Handy indicator provides listing of fatty acids

Circular slide-rule-type chart provides time-saving method of choosing proper fatty acid for any application. Device instantly gives chemical specifications and approximate composition of the various types of fatty acids (19 in number). Specifications which are listed include titer, iodine value, free F. A., acid value, saponification value, and color. In addition, a convenient color conversion chart is included.

"A Guide to Better Fatty Acids" is issued by Wilson & Co., Wilson-Martin Div., Dept. CP, Snyder Ave. and Swanson St., Philadelphia 48, Pa. When inquiring specify CP 8067 on handy form, pages 2 and 3.

## Publication deals with reports of German patents, research

Eleven-page bulletin lists translations of reports of research and patent applications from Western and Eastern Zones of Germany and Austria. Brief summary is included for each individual report as well as source information regarding manufacturer or applicant for patent. General categories included in bulletin are insecticides, pesticides, fungicides, and weed killers.

Opening section deals with benzene hexachloride and includes paper which proposes use of a new catalyst in chlorination of benzene to accelerate reaction and increase yield of gamma-isomer. A process for manufacturing insecticidal hexamethylene tetramine is described by a paper listed in section which deals with new insecticidal and fungicidal agents.

"Improvements in Properties and Applications of Known Agents" lists 18 translations of recent

When inquiring check CP 8063 on handy form, pgs. 2-3

patent applications and describes such items as marked increases in insecticidal effectiveness of DDT and BHC; prolongation of action of insecticidal fumigants; enhanced adhesion of herbicidal substances in aerosols; reduction of metal-corroding effect of acid wood-protecting sprays; and highly improved dispersion of aromatic esters of dialkylthiophosphoric acids. Reports abstracted in last section ("Miscellaneous Report") survey composition, preparation, properties, and uses of various products of the I. G. Farbenindustrie and describe preparation of fungicidal beta-naphthol solutions as well as other manufacturing processes.

Bul 73 is issued by Research Information Service, Dept. CP, 53 Nassau St., New York 38, N. Y. When inquiring specify CP 8068 on handy form, pages 2 and 3.

#### **Colorful booklet summarizes story of uranium production program**

Prepared to indicate the importance of the Colorado Plateau to the nation's atomic energy program, 34-page booklet gives colorful insight into mining and processing of uranium-bearing ores. Since operations are thinly scattered over a large area, it is difficult to realize the importance and scope of the industry. However, booklet gives comprehensive, overall picture of all facets of mining and processing operations by means of informative text and colorful pictures.

Background information of the particular processor who published booklet and historical data relative to deposits themselves is presented in an early section of the publication. Informative material outlines exploration, evaluation, and mining of the material, detailed information is given about subsequent processing of the ore and its eventual uses. Numerous scenic, informative photographs serve to point-out and explain various steps of mining and processing operations as well as parts of historical and background story.

Bul 8031 is issued by United States Vanadium Co., Div., of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring check CP 8069 on handy form, pages 2 and 3.

#### **Reviews properties, uses of vegetable oil**

Thirty-five-page booklet deals with applications and characteristics of Safflower oil. Illustrated with charts and tables, bulletin gives comparative figures on Safflower oil and related oils as well as details on drying characteristics, heat polymerization and other properties. Blown oil, limed oil, and maleated oils are discussed in addition to oil's applications in varnishes and alkyls.

"Safflower Oil" is issued by Pacific Vegetable Oil Corp., Dept. CP, 62 Townsend St., San Francisco 7, Calif. When inquiring specify CP 8070 on handy form, pages 2 and 3.



### ***There's a special paint for places like this and it saves hundreds of dollars***

When you get down to figuring how much it costs to paint a square foot of tank or stack, you find that the paint itself is only a small part of the cost. That's why experienced paint buyers select more quality aluminum paints for jobs like this than any other type.

Because so much aluminum paint is used for these places, special formulas have been developed. Paints made to these formulas stand up longer under heat, cold, sun, rain and the kind of corrosive fumes you find around mills and factories.

We don't make paint. But we make the Alcoa Aluminum Pigments that are used in more aluminum paints than any other brand. So we want to be sure that you get full value from the aluminum paint you buy. It's just good business for us.

If you have a plant, or a stack, or storage tanks, or

most anything else that needs paint that will last a long time, write us about your paint problem and we'll tell you what types of aluminum paints are best. We'll also send you a copy of *Painting with Aluminum*. It's packed with facts on selecting and using aluminum paints. Paint Service Bureau, Aluminum Company of America, 1790-B Alcoa Building, Pittsburgh 19, Pa.

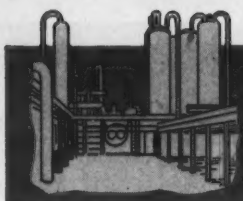
**Alcoa**  
**Aluminum**



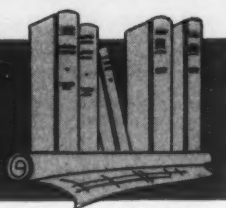
ALUMINUM COMPANY OF AMERICA

When inquiring check CP 8071 on handy form, pgs. 2-3





# Processing and Engineering Data



33a

## Compilation of Formulas for Centrifugal Blowers

By O. W. ACHESON  
Billmyre Blower Division,  
Lamson Corporation

WHILE centrifugal blower performance can be predicted using simple laws, these laws are not usually compiled in one place for reference. Basic blower operation can be figured from relationships given here. These are concerned with the following variables —

AT	absolute temperature (Rankin)	°R
D	density	lb/cu ft
HP	power	hp
N	speed of blower	rpm
P	pressure (inches of mercury or other consistent units can also be used)	psi
SG	specific gravity (basis: Standard Air*)	—
T	temperature	°F
V	volume	cfm

\*at 68°F (528°R) and 29.92 inches mercury

Increasing blower speed —

### 1) increases volume in direct proportion

Example: Blower operating at 1750 rpm delivers 1000 cfm. What volume will be delivered at 3500 rpm?

$$V_2 = V_1 \left( \frac{N_2}{N_1} \right) \text{ OR } \frac{1000 \times 3500}{1750}$$

$$V_2 = 2000 \text{ cfm}$$

### 2) increases pressure as the square

Example: Blower operating at 1750 rpm produces a pressure of 1 psi. What pressure will be available at 3500 rpm?

$$P_2 = P_1 \left( \frac{N_2}{N_1} \right)^2 \text{ OR } \frac{1 \times 3500^2}{1750^2}$$

$$P_2 = 4 \text{ psi}$$

### 3) increases required power as the cube

Example: To operate at 1750 rpm, blower requires 5 hp. How much power is needed to drive it at 3500 rpm?

$$HP_2 = HP_1 \left( \frac{N_2}{N_1} \right)^3 \text{ OR } \frac{5 \times 3500^3}{1750^3}$$

$$HP_2 = 40 \text{ hp}$$

Output pressure —

### 1) varies in direct proportion to density

Example: Blower rated for 3 psi with standard air is to be used with a gas of specific gravity 0.5. What output pressure will be developed?

$$P_g = P_a \times SG \text{ OR } 3 \times .5$$

$$P_g = 1.5 \text{ psi}$$

### 2) varies in direct proportion to barometric pressure

Example: Blower must develop 3 psi when operated at an elevation of 6000 feet (barometric pressure of 23.79 inches — see table). What rating (standard air) is required?

$$P_1 = P_2 \left( \frac{\text{Standard Barometer}}{\text{Actual Barometer}} \right) \text{ OR } \frac{3 \times 29.92}{23.79}$$

$$P_1 = 3.77 \text{ psi OR } 3\frac{3}{4} \text{ To 4 psi Rating}$$

(Continued on page 192)

THESE VALVES AUTOMATICALLY  
COMPENSATE FOR WEAR!



**HOMESTEAD-REISER**  
*Self-Sealed...Lubricated*  
**PLUG VALVES**  
NOW—AT NEW LOW PRICES!

*Assure*

• EXTRA-LONG  
LEAK-PROOF SERVICE

• MINIMUM MAINTENANCE

Nine years of gruelling service in almost every type of industry, have proved that HOMESTEAD-REISERS afford the lowest-cost-per-year fluid control of all valves within their service range. Extra-long, leakless service; more operations between lubrications—up to 22 times more by actual tests with other well-known lubricated plug valves—less maintenance and lower plant operating costs result from their use.

AND NOW, AT NEW, LOWER PRICES,  
HOMESTEAD-REISERS ARE  
MORE THAN EVER, YOUR BEST VALVE BUY!

We make them in semi-steel or cast-steel; 100% Port Area or Venturi; in sizes 1/2" to 14", for steam working pressures to 150 lbs., or oil-water-gas to 200 lbs. Order today and prove them to your own satisfaction.

Write for new catalog 39-5, and for prices  
on your requirements.

**HOMESTEAD VALVE MANUFACTURING COMPANY**

P. O. Box 140 "Serving Since 1892" Coraopolis, Pa.

When inquiring check CP 8072 on handy form, pgs. 2-3

CHEMICAL PROCESSING

### Informative booklet discusses care and use of balances

Precision weighing, the precision balance, assembling a balance, mounting and location of the balance, and methods of weighing are among the interesting and informative subjects which are discussed in comprehensive 32-page booklet. Additional topics considered include general precautions, general cautions in all weighing procedures, daily routine in care of analytical balances, and checking analytical balances.

Detailed information on firmness of support; freedom from vibration; and protection from air currents, changes of temperature, and humidity are included in section dealing with mounting and location of balances. Twelve helpful hints on proper use of units are given in section on general precautions while parallax in readings, temperature equality, and equality of relative humidity are discussed in section concerning general cautions in all weighing procedures.

Terms of common usage with reference to balance units and weighing operations and two general methods of weighing are discussed. "The Care and Use of Analytical Balances" is issued by Christian Becker, Div. of Torsion Balance Co., Dept. CP, Clifton, N. J. When inquiring specify CP 8073 on handy form, pages 2 and 3.

### Shows facilities and products of metal fabricator

Illustrated 4-page bulletin deals with equipment and shop operation as well as facilities and products of metal fabricating firm. Typical products which are illustrated include tanks, filters, separators, and various combined units. Five photos show various views of manufacturing facilities including general shops, fabricating section, and other parts of factory.

Bul AF-52 is issued by Warner Lewis Co., Dept. CP, Box 3096, Tulsa, Okla. When inquiring specify CP 8074 on handy form, pages 2 and 3.

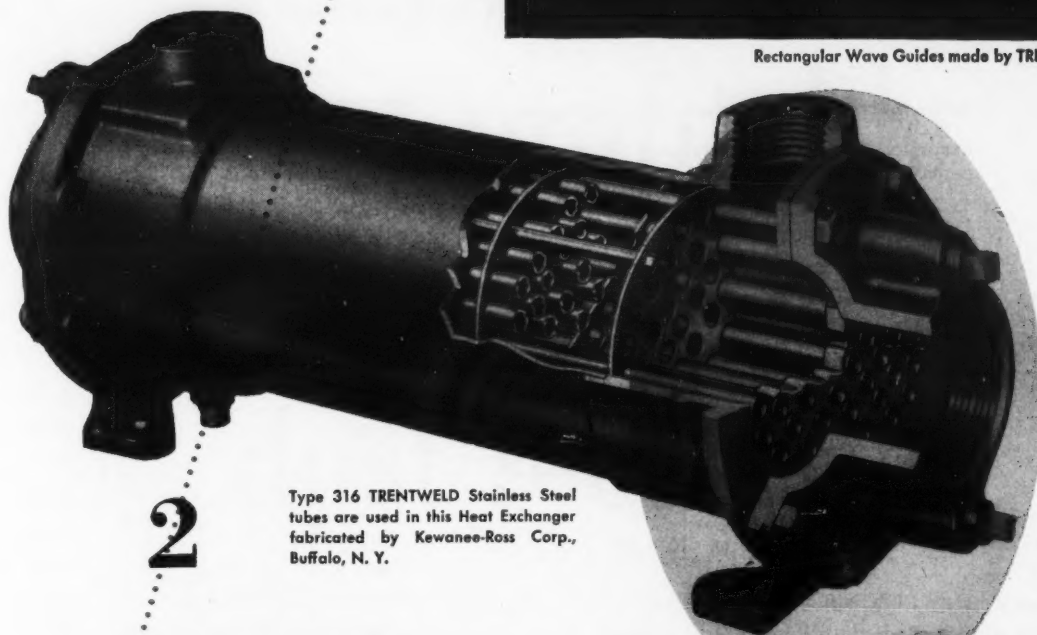
### Describes products for use in process industries

Products of use and interest to chemical processing industries such as chemical, food, paper, petroleum refining, pharmaceutical, and glass are listed in comprehensive catalog. Protective coatings, tank and pipe linings, plastic fittings, hose, pinch valves, packings, conveyor belts, and expansion joints are listed.

Chemical properties, temperature limitation, sizes, and recommended working pressures are covered. Catalog of products for chemical processing industries is issued by Meehanical Goods Div., United States Rubber Co., Dept. CP, Rockefeller Center, New York 20, N. Y. When inquiring specify CP 8075 on handy form, pages 2 and 3.

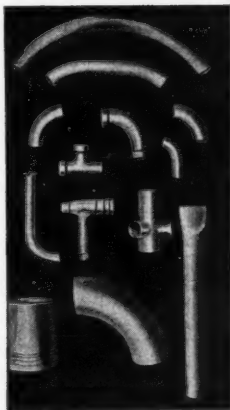


Rectangular Wave Guides made by TRENTWELD



Type 316 TRENTWELD Stainless Steel tubes are used in this Heat Exchanger fabricated by Kewanee-Ross Corp., Buffalo, N. Y.

any need for stainless or high alloy steel tubing is better served with **TRENTWELD**



A baker's dozen of fittings made from TRENTWELD tubing

**TRENTWELD**

**STAINLESS STEEL TUBING**

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

When inquiring check CP 8076 on handy form, pgs. 2-3





## Compilation of Formulas for Centrifugal Blowers

### 3) varies inversely with absolute inlet temperature

Example: What rating (standard air) blower is needed to develop 3 psi at 200°F?

Note: standard 68°F is 528°R  
desired 200°F is 660°R

$$P_1 = P_2 \frac{AT_2}{AT_1} \text{ OR } \frac{3 \times 660}{528}$$

$$P_1 = 3.75 \text{ psi}$$

Horsepower varies in direct proportion to specific gravity at inlet

Example: What power is required for a blower rated at 10 hp (standard air) if gas handled has a specific gravity of 0.85?

$$HP_2 = HP_1 \left[ \frac{SG_1}{SG_2} \right] \text{ OR } 10 \times .85$$

$$HP_2 = 8.5 \text{ hp}$$

Volume varies in inverse proportion to barometric pressure

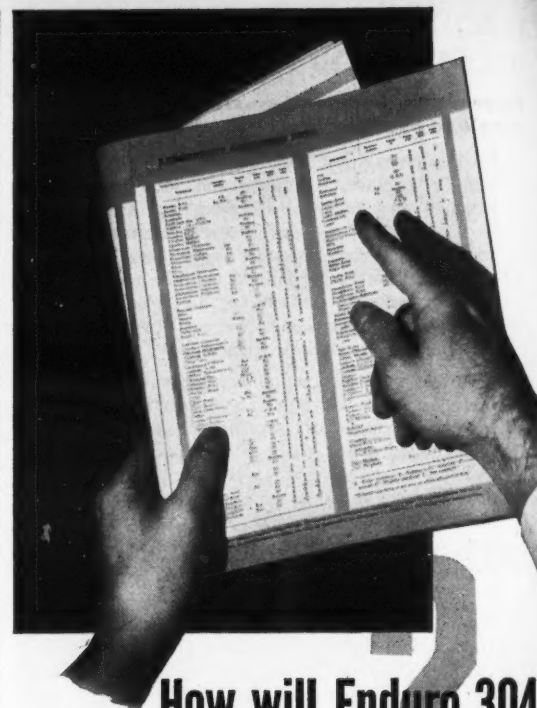
Example: What volume of air will enter a blower supplying 1000 cfm of standard air at an altitude of 6000 feet?

$$V_1 = V_0 \left( \frac{\text{Standard Barometer}}{\text{Actual Barometer}} \right) \text{ OR } \frac{1000 \times 29.92}{23.79}$$

$$V_1 = 1255 \text{ cfm}$$

### Standard Barometric Pressure at Various Altitudes

Feet above sea level	Inches of Mercury
0	29.92
1000	28.80
1500	28.26
2000	27.72
2500	27.20
3000	26.68
3400	26.28
3800	25.88
4200	25.49
4800	24.91
5200	24.53
5600	24.16
6000	23.79
6600	23.26
7200	22.73
7800	22.21
8400	21.70
8800	21.37



How will Enduro 304  
react with . . .

### THIS DATA BOOK TELLS YOU

● Everything from buttermilk to heavy chemicals is included in the corrosion-resistance tables on types 304, 316, and 430 Republic ELECTRUNITE Enduro Stainless Steel Pressure Tubes. The tables in this booklet also give you size ranges, wall thicknesses, and other information to help you design and specify these high-strength electric-weld tubes for your process heat exchanger applications.

Descriptions of the ELECTRUNITE Process are included to show you why these tubes are strong and corrosion-resistant from end to end and all around the tube.

Write today for Booklet SPI-52.

**REPUBLIC STEEL CORPORATION**  
STEEL AND TUBES DIVISION  
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**ELECTRUNITE®**  
STAINLESS STEEL TUBING AND PIPE

When inquiring check CP 8077 on handy form, pgs. 2-3

CHEMICAL PROCESSING

### Special alloy steel increases life of marking tools

Specially-developed alloy steel which is said to reduce spalling and mushrooming, and increase marking life is used to fabricate marking tools which are described in 28-page catalog. Over one hundred different tools and devices are described and illustrated.

Photographs, descriptive material, and technical information and charts are used to describe such items as stamps — made-to-order hand stamps, inspection and symbol stamps, letter and figure stamps, mold stamps and press stamps, marking machines and fixtures, special marking outfits, press and hand type holders, die and die inserts, engineers and inspection hammers, and steel type.

Bul 100 is issued by M. E. Cunningham Co., Dept. CP, 1025 Chateau St., Pittsburgh 33, Pa. When inquiring specify CP 8078 on handy form, pages 2 and 3.

### Determines surface roughness directly in microinches

Versatile equipment is designed to measure practically all surfaces — internal and external — straight and tapered — that can be produced by industrial machining, grinding, and finishing operations. In addition to providing readings directly in microinches from fractions of a microinch to 1000 microinches rms, unit makes measurements over any desired length of trace from 1/32" up to several feet.

Complete specifications and applications for various units of equipment are listed in 24-page illustrated catalog. Initial section of bulletin describes the indicating unit which includes an industrial-type electronic amplifier and meter panel and is followed by a comprehensive discussion and illustration of types of manual tracing units and their uses. Manual and motor-driven piloting units are described in detail together with various accessories to expand and facilitate its use. Recorders and combinations of equipment commonly selected for various job requirements are outlined in concluding sections of publication. Cat C-52 is issued by Micrometrical Manufacturing Co., Dept. CP, 345 S. Main St., Ann Arbor, Mich. When inquiring specify CP 8079 on handy form, pages 2 and 3.

### Specifications, features of serological baths

Illustrated bulletin shows construction, features, and specifications of complete line of serological water baths. Eleven different baths designed for a variety of purposes are described in detail.

Sec 3, Cat 100 is issued by Chicago Surgical and Electrical Co., Dept. CP, 217 N. Desplaines St., Chicago 6, Ill. When inquiring specify CP 8080 on handy Reader Service slip between pages 2 and 3.

*Your Management wants to know...*

# The most profitable approach to dust recovery

In every industry, from chemicals to food to steel, Buell engineers, working with plant engineers, have established an enviable 18-year record of turning unnecessary dust losses into substantial new profits. What's more, Buell Dust Recovery Systems uncover, for all American industry, these additional important advantages: improved product quality, smoother plant-community relations and higher employee morale.

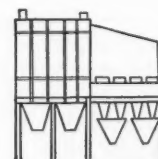
To take advantage of Buell's background and experience in the highly specialized science of dust recovery, ask for further information about Buell's **3 basic systems** of dust collection. See how they can help you turn dust into dollars. Send for Buell's new, informative bulletin titled, "The Collection and Recovery of Industrial Dusts." Buell Engineering Co., Dept. 11-B, 70 Pine Street, New York 5, New York.



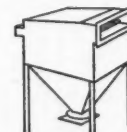
VAN TONGEREN CYCLONE



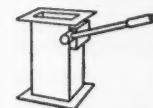
'SF' ELECTRIC PRECIPITATOR



PRECIPITATOR—CYCLONE COMBINATION



TYPE 'LR' COLLECTOR



DUST HOPPER VALVES



# buell

**ENGINEERED EFFICIENCY IN DUST RECOVERY**

When inquiring check CP 8081 on handy form, pgs. 2-3





## Refractive Index of Perchloric Acid

By D. S. DAVIS

Professor of Chemical Engineering, Virginia Polytechnic Institute

**T**ABULAR data for refractive index of aqueous perchloric acid have been given.<sup>2</sup> In the range of concentration from 50 to 70 per cent, concentration—refractive index relation is linear with only a small temperature variation near normal room temperature. Relationship can be shown by the equation —

$$n = a + bP$$

where:

$n$  = refractive index

$p$  = per cent perchloric acid in aqueous solution

$a, b$  depend on temperature as shown

Temp (°C)	a	b
20	1.3033	0.001714
25	1.3010	0.001725
30	1.3002	0.001700

Nomograph presented here is constructed by established methods<sup>1</sup> to provide rapid, accurate estimation of perchloric acid content of a solution within this range.

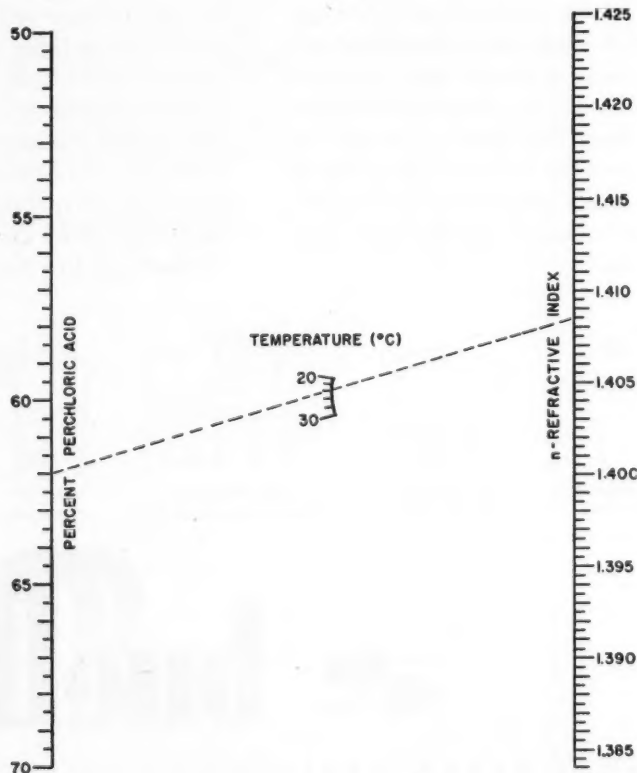
### Typical Example

Refractive index at 24°C is 1.4085. What is concentration of perchloric in aqueous solution?

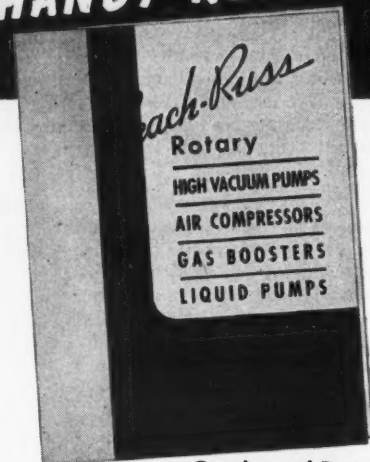
Connect 1.4085 on  $n$ -scale with 24 on temperature scale. Read concentration as 62.0 per cent.

### LITERATURE CITED

- (1) DAVIS, "Empirical Equations and Nomography," Chapter IX, (1943)
- (2) SMITH and LAMPLUGH, "Chemist-Analyst," Vol 41, No. 1, p 7 (1952)



For  
**HANDY REFERENCE**



Condensed Data  
on the Complete Beach-Russ Line of  
Rotary Pumps

WRITE FOR YOUR COPY... or for as many copies  
as you may need for distribution in interested departments.

**BEACH-RUSS COMPANY**

46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 8082 on handy form, pgs. 2-3

**Powermaster**  
PACKAGED AUTOMATIC BOILERS  
with  
**VORIFLOW**® Combustion  
Save Fuel  
and  
Man Hours!

For light oil, heavy oil,  
gas and gas/oil firing.  
Steam generating units  
from 15 to 500 HP.—15  
to 250 p.s.i. Hot water  
boiler units 30 p.s.i. Re-  
duce operating costs as  
much as 40% — save  
man-hours — get clean,  
dependable heat and hot  
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Write For Bulletin

**ORR & SEMBOWER, INC.**

960 Morgantown Rd., Reading, Pa.

BUILDERS OF DEPENDABLE BOILERS SINCE 1885

When inquiring check CP 8083 on handy form, pgs. 2-3

CHEMICAL PROCESSING

### Water repellent protects fibers without sealing air spaces

Designed for use on all types of fabrics, silicone base invisible water repellent incorporates a blend of penetrating and protective waterproofings plus a fungicide. The invisible silicones form a waterproof coating over each individual fiber, but they do not seal spaces between fibers or between threads in the weave. Fungicide contained in the product renders treated fabrics resistant to mildew or rot.

Six-page bulletin contains information regarding application, advantages, and uses of water repellent. Bul 83152 is issued by Speco, Inc., Dept. CP, 7308 Associate Ave., Cleveland 9, Ohio. When inquiring specify CP 8084 on handy form, pages 2 and 3.

### Convenient tables summarize properties of chemicals

Twenty-page bulletin presents data relative to physical properties and applications for more than 320 synthetic organic chemicals. For ready reference, chemicals are arranged by family groups and data on physical properties are arranged in handy tubular form. Booklet conveniently summarizes data of value to users of organic chemicals.

Feature of publication is section on 56 research chemicals — among these are synthetic alpha-picoline, four vinyl esters, diethoxy tetrahydrofuran, and N,N-di(alpha-methylbenzyl) ethylene diamine. Chemical families included in contents are alcohols, glycols and triols, acetals, plasticizers, esters, ketones, ethers and oxides, glycol-ethers, acids, chlorine compounds, nitrogen compounds, aryl compounds, aldehydes, anhydrides, metallic salts, lubricants, polyalkylene glycols, and other related chemicals.

Convenient tables for each family of chemicals list product and brand names, chemical formula, molecular weight, specific gravity, boiling point, freezing point, solubility of chemical in water, solubility of water in chemical, and flash point.

Bul F-6136 is issued by Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 8085 on handy form, pages 2 and 3.

### Discusses formulation of flat wall finishes

Informative booklet discusses problems involved in formulating flat wall finishes with various types of oil and resin vehicles. Use of heat bodied oils, gelled oils, limed or calci-coater oils, alkyd resins, and other non-oil type vehicles is described.

"Falk Talk on Oils and Resins for Flat Wall Finishes" is available on letterhead request to Falk Division, Cargill, Incorporated, Dept. CP, P O Box 1075, Pittsburgh 30, Pa.

# Turba-Film Evaporation Process Achieves Amazing Results!

**Turbulent thin film principle evaporates Time-at-Temperature sensitive materials... in seconds.**

**The Turba-Film® Continuous Evaporator employs a totally different concept of evaporation. Makes heretofore extremely difficult evaporating processes simple and rapid. Actually evaporates most substances in a few seconds!**

Here's how the patented Turba-Film Evaporator works. The substance to be evaporated is fed into the evaporating section. Here it is whirled against the wall by controlled-speed rotor blades. This forms a thin turbulent film, centrifugally held to the wall, which spins in a gravity flow through the chamber and out... completing the process. The vapors rise into the separating section where rotor blades beat out any entrained droplets and force them back through the evaporating section.

So thorough is this Turba-Film process that no substance requires re-circulation... the desired concentration is achieved in one pass!

So fast is the Turba-Film Evaporator action that proper heating is done in seconds. Eliminates hydrostatic head. No localized overheating. Eliminates vapor binding on heat transfer surface. Maintains high over-all heat transfer coefficient of from 100 to 500!

Colors, flavors, potency, odor, nutritional and other valuable properties are retained to a much higher degree. Particularly important for Time-at-Temperature sensitive materials such as: pharmaceutical "mycins," vitamins, malt extracts, juice concentrates, etc.

Because such a small quantity is in process at any given time, the Rodney Hunt Turba-Film Evaporator permits quick change-over from one product to another. Makes cleaning and maintenance easy with minimum process hold-up. Allows constant quality control.

The turbulent thin film principle permits concentration to very much higher viscosities and solids content than is practical with conventional equipment. The Turba-Film Evaporator will satisfactorily concentrate heavy viscous materials in excess of 20,000 centipoises.

Turba-Film processing has also proved strikingly effective for deodorizing, stripping and for evaporation of water or solvents from solutions of organic compounds. When distilling, the residues are discharged continuously and are not subjected to re-circulation and "cooking." Where only the vapors were wanted, Turba-Film has distilled up to 99% of the material!

The Turba-Film Evaporator (Luwa Process, Switzerland) is particularly important for applications which are difficult or uneconomical to process conventionally.

Please consider our complete engineering staff at your disposal for consultation on any possible Turba-Film application. We have the facilities for making test runs in our pilot plant: or we can provide a portable laboratory unit for use in your own plant.

Models available in ranges from 40 to 2500 lbs./hr. of water evaporation. Stainless steel construction.

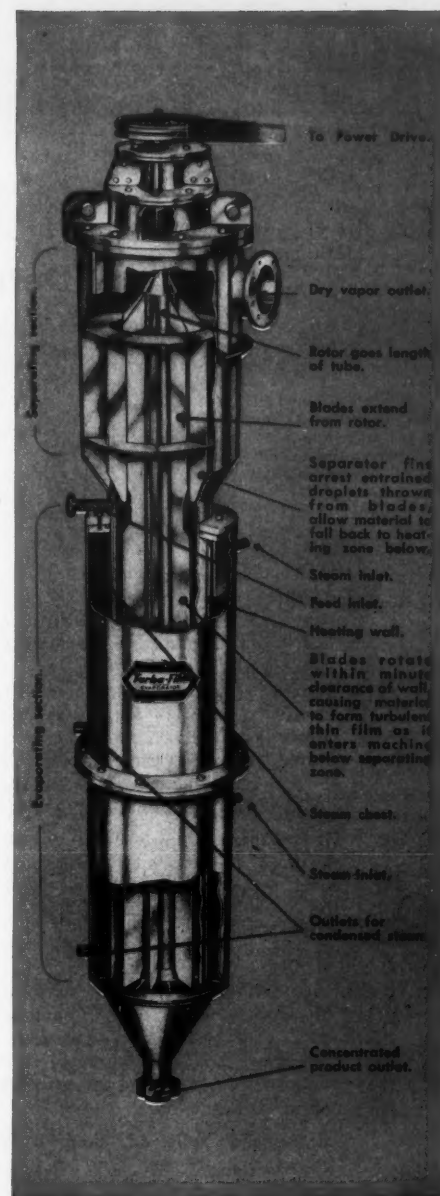
Mail this coupon for free color brochure explaining the Turba-Film Evaporator in detail.



Manufacturing Engineers since 1840

**RODNEY HUNT MACHINE COMPANY**

Process Equipment Division, 32 Vale Street, Orange, Massachusetts



### RODNEY HUNT MACHINE COMPANY

32 Vale Street, Orange, Mass.

CP-2-53

Please send Free brochure giving details of Turba-Film Evaporator.

☐ I want details on your testing program.

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

Type of Industry.....Product.....

When inquiring check CP 8086 on handy form, pgs. 2-3





## Determining Composition of Commercial Toluene

By GEORGE MAPSTONE and J. T. MUNDAY

Edited by D. S. DAVIS

Professor of Chemical Engineering, Virginia Polytechnic Institute

**B**Y means of a standard distillation technique, xylene content of commercial toluene can be determined from percentage which distills at 120°C. Same method<sup>1</sup> allows benzene content to be estimated from temperature at which 5 per cent distills. Results are interpreted with this nomograph.

If paraffins are present they are assumed to be evenly distributed over the boiling range and must be determined separately.

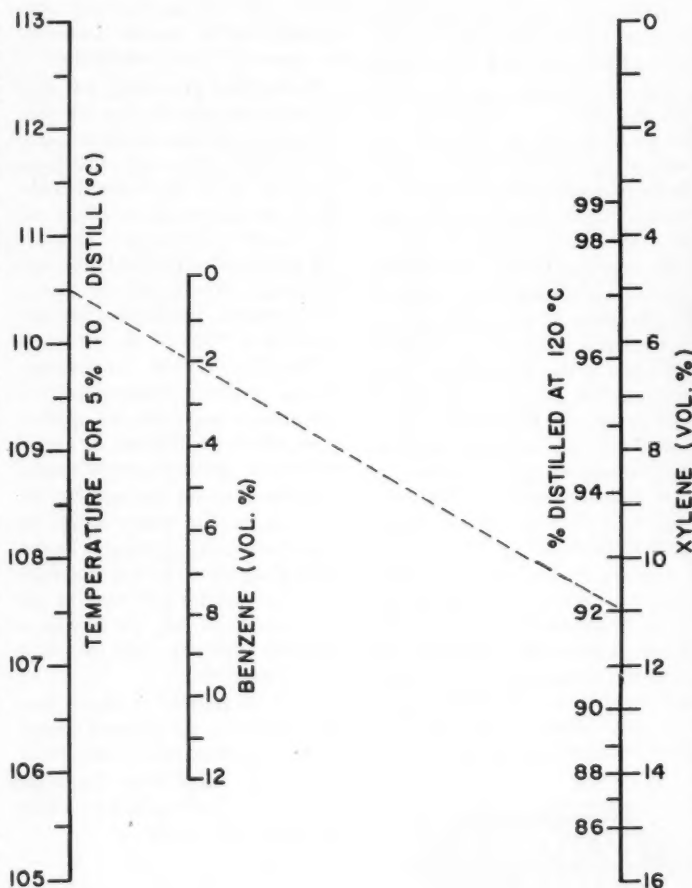
### Typical Example

Five per cent of a sample of toluene distills over at 110.5°C and at 120°C, 92 per cent comes over. What is the composition of the sample assuming there are no paraffins present?

Right-hand scale of nomograph shows that 92 per cent over at 120°C corresponds to 11 per cent xylene. Connecting this value to the "5 per cent point" of 110.5°C, it is seen that about 2 per cent of benzene is present. Therefore sample contains 2 per cent benzene, 11 per cent xylene, and (by difference) 87 per cent toluene.

### LITERATURE CITED

(1) STPTC, "Standard Methods for Testing Tar and Its Products," 2nd Ed, Test LB25-38, pp 188-191, London (1938)



Here are the answers on

**R/M Teflon**

Packings & Gaskets

The new catalog on R/M Teflon Products lists the diversified line of Teflon packings, gaskets, rods, sheets, tubes, tapes and fabricated parts now being made by Raybestos-Manhattan. These materials are inert chemically except with molten alkali metals and with fluorine gas or chlorine trifluoride, both at high temperatures. They are ideal for sealing pumps, valves, flanges, handholes, manholes, covers and other movable parts in chemical equipment. Write for your copy of this new catalog today.

\*Du Pont trade-mark for its tetrafluoroethylene resin

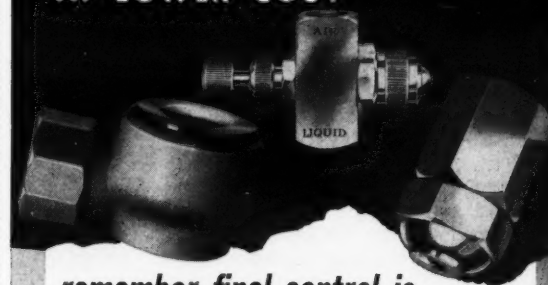


## PACKINGS

RAYBESTOS-MANHATTAN, INC.  
PACKING DIVISION, MANHEIM, PA.

When inquiring check CP 8087 on handy form, pgs. 2-3

FOR EFFECTIVE SPRAYING  
AT LOWER COST



remember final control is  
the **SPRAY NOZZLE** you use!

In design... choose the Spray Nozzles that give you proper performance, with exact spray pattern, impact, spray angle and capacity. In application... be sure the nozzles as supplied are produced to close tolerances. Metallogically, make certain the spray nozzles fit your use.

With Spraying Systems you can be sure of spray nozzles to meet all three requirements. Let Spraying Systems Co. recommend Spray Nozzles to meet your needs best.

**YOUR GUIDE TO SPRAY NOZZLE SELECTION**  
Spraying Systems Co. Catalog No. 22... 32 pages, with complete performance data. Also write for Catalog 23... Pneumatic Atomizing Nozzles.

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FOR EFFICIENT SPRAYING MAKE SURE THE NOZZLE IS RIGHT

When inquiring check CP 8088 on handy form, pgs. 2-3

**X-ray spectrograph chart shows  
X-ray beams for elements**

Handy reference 17½ x 22½" wall-type chart shows characteristic secondary X-ray beams for elements from sodium (atomic no. 11) to uranium (atomic no. 92). Chart gives K Alpha and K Beta lines for mica (reflecting) analyzing crystal, for quartz analyzing crystal, for lithium fluoride analyzing crystal, and rock salt analyzing crystal. It also shows L Alpha, and L Beta, lines, 1st and 2nd orders, for rock salt analyzing crystal.

Horizontal scale on chart shows 2 θ angle in degrees as read on X-ray spectrograph and wavelengths in Angstroms for all elements under various conditions.

"X-ray Spectrograph Chart" is issued by Research & Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mt. Vernon, N. Y. When inquiring specify CP 8089 on handy form, pages 2 and 3.

**Interference filters available  
from 340-800 μ**

Complete selection of transmission-type interference filters offers wavelength range from 340-800 μ for use in isolating specific spectral bands. Filters of this type are useful in fields of colorimetry, color densitometry, photomicrography, and flame photometry.

Filters consist of two highly reflecting but partially transmitting films of silver separated by spacer film of non-absorbing material, deposited on 2"-square glass plate by high vacuum methods. Depth of separation of silver films by spacer film governs wavelength position of the "pass band," hence color of light which filter will transmit.

Four-page bulletin describes characteristics of filters and gives suggestions for their use. Bul D-248 is issued by Bausch & Lomb Optical Co., Dept. CP, Rochester 2, N. Y. When inquiring specify CP 8090 on handy Reader Service slip pages 2 and 3.

**Specifications, characteristics  
of photoelectric cells**

Cell structure, voltage supply, current sensitivity, internal resistance, spectral sensitivity, and mounting are included in topics discussed in 4-page bulletin which deals with selenium self-generating photoelectric cells. Five charts illustrate various characteristics of units and line drawings as well as circuit diagrams show other details of units. Performance characteristics and applications are summarized.

Bul PC-649 is issued by International Rectifier Corp., Dept. CP, 1521 E. Grand Ave., El Segundo, Calif. When inquiring specify CP 8091 on handy form, pages 2 and 3.

# PACKAGED V-BELT FAN UNITS

## BETTER FOR MANY AIR HANDLING APPLICATIONS

**MOTOR DRIVEN ASSEMBLIES—NO EXPENSIVE  
FOUNDATIONS REQUIRED**

Clarage V-belt Ready Units come in 18 sizes — capacities to 12,000 c.f.m. . . . within their range, the **ECONOMY ANSWER** to almost any **INDOOR** or **OUTDOOR** air handling requirement.

Use Ready Units and save the expense of building separate motor foundations. Use Ready Units and eliminate alignment problems. Use Ready Units for installations in record time and at lowest cost consistent with quality fan equipment.

Ready Units with or without Outdoor Covers shipped immediately. Specially constructed units for handling corrosive gases, etc., take a little longer.

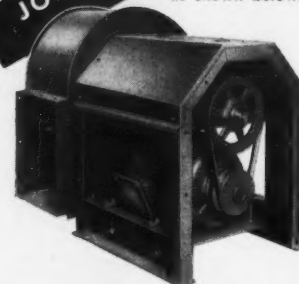
**WRITE FOR READY UNIT CATALOG 515** giving details, capacities and dimensions on the most modern "packaged" fan units available today — address, **CLARAGE FAN COMPANY, Kalamazoo, Michigan.**



Cut at left shows standard Ready Unit as built in three largest sizes. These larger units, too, can be equipped with Outdoor Covers.

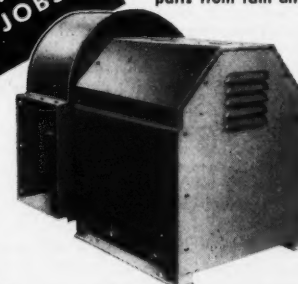
**NEW! CLARAGE DEVELOPMENT**  
Clarage Ready Units are a notable advance in "packaged" fan units — highly efficient, compact, quiet in operation. And, like all other Clarage equipment, you can **RELY** on them for dependable, economical service.

**INDOOR JOBS**

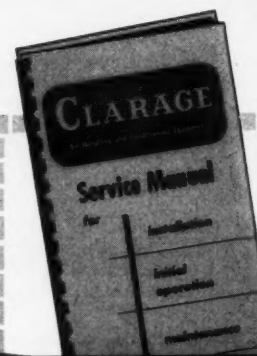


Standard Ready Units (except three largest sizes) afford protection to fan bearings, motor and drive as shown below.

**OUTDOOR JOBS**



Cut below shows Ready Unit equipped with (easily removable) Outdoor Covers shielding all working parts from rain and snow.

**68 PAGES or  
VALUABLE INFORMATION**

New Manual shows how to properly install and service Clarage fans, blowers and air conditioning units . . . valuable information adaptable to almost any type of fan job. Sent without charge to factory executives, engineers and maintenance officials.

You can Rely on...

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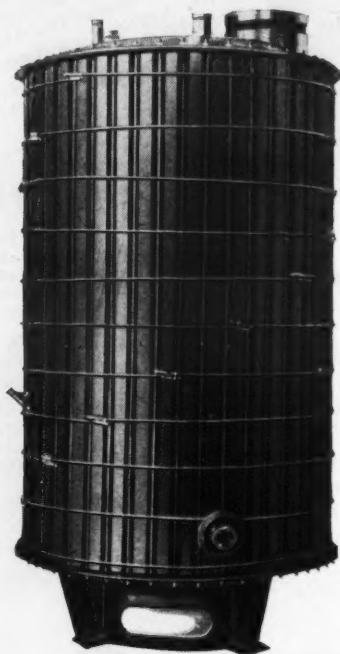
SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

When inquiring check CP 8092 on handy form, pgs. 2-3



## FOR BIG, CORROSION-RESISTANT TANKS

**HAVEG IS A LOGICAL ANSWER...**



Get what you want with a Haveg-engineered tank. Haveg is not a lining or coating. It is a solid, non-metallic material (resistant to corrosion through and through) that is molded by the Haveg Corporation into tanks as large as 10 feet in diameter by 12 feet in depth. These are single piece, without seams or joints. By joining such sections, even larger tanks can be built. Low cost, with exceptionally long life.

From top to bottom, a Haveg tank has special design features to improve handling acids, bases, salts in your plant. Flat, sloping, cone, dished bottoms are molded to fit your drainage needs. Because Haveg can be machined and repaired on the spot, any change in piping is easily made by your own plant crew.

Work with a company that understands how to fight corrosion. Haveg has thousands of molds for any type of chemical handling equipment. Get the complete Haveg story by contacting your Haveg sales engineer and writing for a 64-page technical bulletin (F-6). It shows tank sizes, installation and machining tips, complete chemical resistance tables. Write now... for Haveg is a logical answer, both material and engineering-wise, for corrosion-resistant tanks, towers, pipes, valves, fittings.

The Haveg factory is at Marshallton, Delaware (phone Wilmington 3-8884). Capacity has been increased, with deliveries improved. Why take less, when you can get proven, long-life Haveg?

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## NEW LITERATURE

### Bulletins give specifications of industrial fans

Specifications, features and advantages of two types of industrial fans are outlined in two illustrated bulletins. Bul 1500 deals with direct driven and belt driven duct fans, and includes dimensional information in addition to discussion of construction and applications. Direct driven duct fans are designed for connecting complete fan assembly in duct system, while belt driven duct fan is used when motor is to be kept out of air stream.

Bul 2000 concerns portable utility fans with 90° adjustable up or down feature. Specifications and possible applications are discussed. Bulletins are issued by Aerovent Fan Co., Inc., Dept. CP, Piqua, Ohio. When inquiring specify CP 8094 on handy form, pages 2 and 3.

### Features complete line of timing relays

Sixteen-page bulletin describes complete line of timing relays. Fluid dashpot, pneumatic, and electronic timers are illustrated and described. In addition, bulletin outlines complete operation and engineering data as well as giving suggested applications for various units. A convenient selector chart provides suggestions on various factors to consider in choosing a timing relay for a particular application.

"Timing Relays" is issued by Allen-Bradley Co., Dept. CP, 118 W. Greenfield, Milwaukee, Wis. When inquiring specify CP 8095 on handy form, pages 2 and 3.

### Explains seven advantages of recording systems

Graphically illustrated booklet points out 7 advantages of using recording equipment for study and recording of a wide variety of electrical and mechanical phenomena. Advantages which are discussed include: 1) flexibility; 2) no ink; 3) rectangular coordinates; 4) high torque movement; 5) wide choice of speeds and channels; 6) code and time markings; and 7) interchangeability.

"7 Advantages of Sanborn Direct-writing Recorders for Industrial Users" is issued by Sanborn Co., Dept. CP, 38 Osborne St., Cambridge, Mass. When inquiring check CP 8096 on handy form, pages 2 and 3.

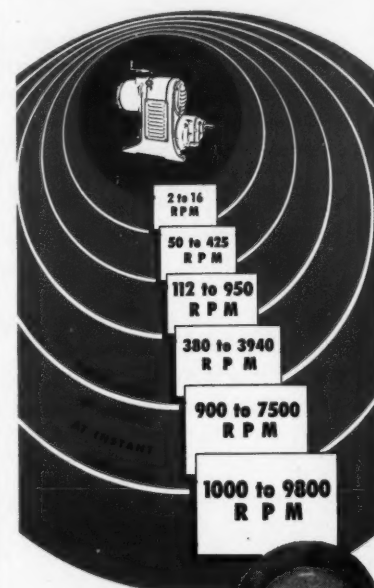
### Gaskets, packings made of resin resist acids, solvents, alkalis

Illustrated 8-page bulletin deals with gaskets, rings and irregular shapes, sheets, tubes, rods and tape, packings for stuffing boxes and valve stems, and braided and plastic packings fabricated from Teflon. Because of the inert physi-

# U.S.

## VARIDRIVE

*-the miracle motor*



**ANY  
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by simple dial control

Give your machines any and every speed to a split rpm within a range of 10 to 1. Varidrive accomplishes in a single power unit the functions of a motor, speed changer, gear box and controls, to occupy little more space than a fixed speed motor. The Varidrive will upgrade the quality of your work, step up your machine's output 10%, 20%, 30%.

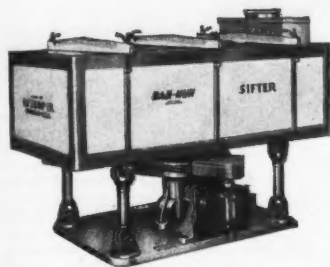
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Los Angeles 54, Calif. Milford, Conn.

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U. S. Electrical Motors Inc. Box 2050, Los Angeles 54, Calif. or Milford, Conn.		
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COMPANY _____		
ADDRESS _____		
CITY _____	ZONE _____	STATE _____

When inquiring check CP 8097 on handy form, pgs. 2-3

CHEMICAL PROCESSING

## BAR-NUN ROTARY SIFTERS



### BAR-NUN Flow Control Gives You Fast, Thorough Separations

**S**PECIAL flow control enables the Bar-Nun Rotary Sifter to give a fast, clean, complete separation on every sieve. Additional sieves can be used to make different separations, or to double or triple the capacity of the single sieve as desired. Result: Surprisingly big capacity in very little floor space. Even a crowded plant can usually accommodate the Bar-Nun, because flexibility of flow permits a wide choice of outlet locations.

For every sifting or grading requirement in your plant — check up on the advantages of doing the job on a Bar-Nun Rotary Sifter. Catalog No. 101, Section S, is yours on request — no obligation.

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B. F. GUMP CO.,  
1344 So. Cicero Ave., Chicago 50, Ill.

Gentlemen: Please send me descriptive literature and complete information on the GUMP-Built Equipment indicated below:

- ☐ BAR-NUN SIFTERS—grade, scalp or sift dry materials.
- ☐ DRAVER FEEDERS—accurate volume percentage feeding.
- ☐ DRAVER Continuous Mixing Systems—accurate, efficient mixing.
- ☐ VIBROX PACKERS—pack dry materials in bags, drums, barrels.
- ☐ NET WEIGHTERS—automatic weights range from 3 oz. to 75 lbs.

**B. F. Gump Co.**

Engineers and Manufacturers Since 1872



1344 SOUTH CICERO AVE.  
CHICAGO 50, ILLINOIS

When inquiring check CP 8098  
on handy form, pgs. 2-3

## NEW LITERATURE

cal qualities of the resin, parts which are fabricated from it are useful where resistance to acids, solvents, and alkalis is desired. In addition, parts made of the material have desirable characteristics for use in electrical, food processing, and other fields.

Specifications, uses, advantages, and properties of various parts are described in informative bulletin. "R/M Teflon Products" is issued by Raybestos-Manhattan, Inc., Packing Div., Dept. CP, Manheim, Pa. When inquiring specify CP 8099 on handy form, pages 2 and 3.

### Operates 2 to 18 circuits with a single float

Multi-circuit float controls provide automatic, coordinated operation of pumps, valves, gates, alarms, indicators, and other electrically operated devices controlled by magnetic starters or two-wire circuits. Feature of units is that they give program operation of two to eighteen circuits (more with use of multiple units) with a single float.

Typical operating schedule, typical installation plans, dimensions, and typical specifications are included in 4-page bulletin. Bul 3500 is issued by Automatic Control Co., Dept. CP, St. Paul 4, Minn. When inquiring specify CP 8100 on handy form, pages 2 and 3.

### Dibutyl adipate gives resins low-temperature flexibility

Valuable for its ability to impart low-temperature flexibility to various synthetic resins, dibutyl adipate is particularly effective when used in polyvinyl chloride, polyvinyl chloride acetate, ethyl cellulose, cellulose nitrate, polystyrene, and synthetic rubbers.

Two-page bulletin deals with properties, description, and applications of dibutyl adipate. Technical Service Report E-5 is issued by Witco Chemical Co., Dept. CP, 295 Madison Ave., New York 17, N. Y. When inquiring specify CP 8101 on handy form, pages 2 and 3.

### Lightweight flexible ducting has variety of applications

Complete line of flexible tubing includes sizes ranging from less than 1 inch to 30 inches in diameter. The ducting, made from fabric-supported rubber or plastic wound on helical spring wire coils, is lightweight, retractable, non-collapsible, non-kinkable, flexible enough to allow 180° turns, and requires no installation skill.

Illustrated bulletin shows features and applications of complete line of flexible tubing. Cat C2-3 is issued by Flexible Tubing Corp., Dept. CP, Guilford, Conn. When inquiring specify CP 8102 on handy form, pages 2 and 3.

**Increase output—operate your  
machines at the best speeds**

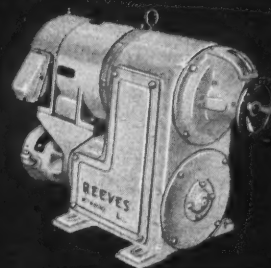
turn a  
handwheel



or touch a  
button



**REEVES**  
Vari-Speed  
Motodrive®



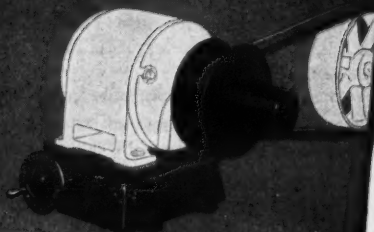
**REEVES**  
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Provides stepless speed adjustability over a wide range—as high as 16 to 1; sizes to 87 hp. Vertical or horizontal designs—open or enclosed.



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Motor Pulley

Converts any standard, constant-speed motor to a variable speed drive. Speed variations up to 4 to 1. Sizes to 10 hp.



Applied to your machines, REEVES Variable Speed Drives will deliver the exact speed needed for each operation . . . each operator . . . under every changing condition. Speed adjustment is positive and accurate within the fraction of an rpm . . . is obtained instantly, without stopping the machine. Automatic control also available. REEVES is now standard equipment on 2,615 makes of machines. Easily applied to machines in service. Write for complete information to Dept. 1CE.

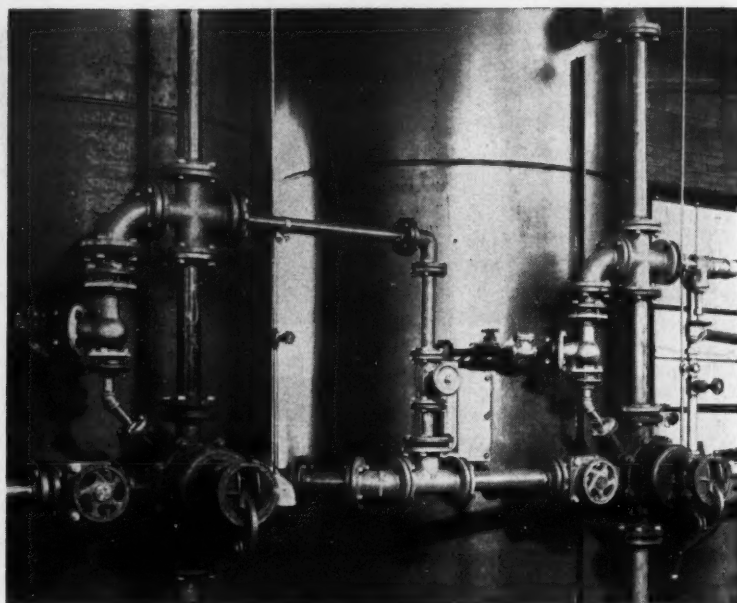
**REEVES PULLEY COMPANY • COLUMBUS, INDIANA**  
Recognized leader in the specialized field of variable speed control

When inquiring check CP 8103 on handy form, pgs. 2-3



# CUT CORROSION COSTS

install corrosion-resistant  
SARAN LINED STEEL PIPE  
for long, trouble-free service



Saran Lined Pipe, Fittings and Valves are used in this automatic water deionizer in a large water purification system. Installations such as this give trouble-free service for many years.

**Saran Lined Pipe Company**  
2415 Burdette Ave., Ferndale, Mich.

Please send me a copy of your catalog on Saran Lined Pipe, Valves and Fittings.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Corrosion-resistant Saran Lined Steel Pipe sharply reduces repair and maintenance costs in corrosive piping installations. Downtime is cut to a minimum because this rigid pipe has high pressure strength and durability—which mean dependable, long-term service. Easily installed Saran Lined Steel Pipe can be cut and threaded in the field—no need for special tools or handling. Wherever superior resistance to most chemicals and solvents is demanded, be sure to consider Saran Lined Pipe, Fittings and Valves. Write to the distributor: SARAN LINED PIPE COMPANY, 2415 Burdette Avenue, Ferndale, Michigan. Offices in: New York • Boston • Pittsburgh • Tulsa • Philadelphia • Chicago • Portland • Indianapolis • San Francisco • Houston • Denver • Los Angeles • Seattle • Cleveland • Charleston, S. C. • Toronto • Montreal. Clip and send today!

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**DOW**

When inquiring check CP 8104 on handy form, pgs. 2-3

## NEW LITERATURE

**Catalog illustrates small metal parts**

Special pins and pivots, screw driver blades, all types of rotary swaged rods, wires and tubing in practically all kinds of metals, mandrels for grinding wheels, abrasive points and polishing wheels, perforating punches in straight carbon or alloy steels, and tapered or pointed wires and rods are pictured in 4-page catalog.

"Torrington Small Precision Metal Parts" is issued by The Torrington Co., Specialties Div., Dept. CP, 500 Field St., Torrington, Conn. When inquiring specify CP 8105 on handy form, pages 2 and 3.

**Lists uses, properties of stearates, soaps**

Comprehensive bulletin describes complete line of metallic stearates and their uses and properties. Stearates discussed include aluminum, cadmium, calcium, lead, lithium, magnesium, sodium and zinc as well as special soaps.

Various industries in which these compounds find applications, and characteristics of compounds which fit them for each application are discussed.

Bul 53-1 is available on letterhead request to Witco Chemical Co., Dept. CP, 295 Madison Ave., New York 17, N. Y.

**Outlines eight reasons for business courtesy**

Pocket-size booklet presents illustrated discussion of courtesy in business and industry. In addition to outlining eight reasons for courtesy in the employee's business and personal life and why courtesy is important in creating good will for his company, booklet gives twelve rules for developing better habits of courtesy in everyday living.

To obtain a copy of "Thank You" remit 20 cents direct to The Bureau of Business Practice, Div. of The National Foreman's Institute, Dept. CP, 100 Garfield Ave., New London, Connecticut.

Edward PRESENTS

### New ALL-PURPOSE STEEL VALVES

A new all-purpose valve series, ideal for almost any service where small O. S. & Y. steel valves are used. Drop forged steel for greatest strength... simplest packing arrangement... tight, easily accessible union or bolted bonnet joints... bronze yoke bushings... microscopically mated seats and disks... lock welded parts. Built in sizes 1/4 to 2 in. inclusive, globe or angle, screwed or socket welding ends, carbon or chromium molybdenum steels, in 600 or 1500 lbsp classes. Stocks now available. Bolted bonnet 1-1/4 in. up 600 lb, 1 in. up 1500 lb. Union bonnet in smaller sizes.

For full details, dimensions, illustrations write today for your free copy of . . . **BULLETIN 501**

Another **Product**  
**Edward Valves, Inc.**

Subsidiary of **ROCKWELL MANUFACTURING COMPANY**  
1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 8106 on handy form, pgs. 2-3

**THE ONLY AIR CYLINDER WITH ALL CONTROLS Built-In**

**THIS** revolutionary air cylinder is a complete power unit in itself. Four-way directional valve, with an operating lever adjustable to work from any angle in any plane, and separate speed controls for advance and retract strokes, are integral with the cylinder itself. This compact "controlled-air-power" unit requires only one air connection which can be flexible hose. Available in 1/4", 1 1/4", 2 1/2", 3 3/8" and 4 1/2" bores. Any stroke length.

Known as the Bellows Air Motor, this modern version of air cylinder power makes air safer, easier and simpler to use. Helps in a hundred ways to get more production at lower cost.

• Write today for your free copy of the new 30-page bulletin "Faster, Safer, Better Production". Address: The Bellows Co., Dept. CP-253 222 W. Market St., Akron 9, Ohio.

**The Bellows Co.**

Akron 9, Ohio

When inquiring check CP 8107 on handy form, pgs. 2-3

CHEMICAL PROCESSING

### Ethylenediamine tetraacetic acid has variety of applications

Technically pure ethylenediamine tetraacetic acid and its various commercially available metal complexes and substituted products have numerous applications in fields of agriculture, chemical analysis, cosmetics, foods, beverages, germicides, leather, metal finishing, mineral separations, paints, pharmaceuticals, photography, rubber, polymers, plastics, soaps, detergents, textiles, water treatment, and purification of chemicals.

General description, properties, complex formation, effect of various factors on complex formation, displacement reactions, properties of complexes, and analytical procedures for sequestrene are outlined in opening sections of 54-page descriptive bulletin which deals with ethylenediamine tetraacetic acid. Individual sections of booklet discuss compound's applications in fields mentioned previously.

"Sequestrene" is issued by Alrose Chemical Co., Dept. CP, Box 1294, Providence 1, R. I. When inquiring specify CP 8108 on handy form, pages 2 and 3.

### Illustrated bulletin describes 77 weather instruments

Dealing with complete line of weather instruments — ranging from units to measure wind speed and direction to rain gages — comprehensive bulletin gives details of operation and construction of individual units. Detailed photographs show features and components of each unit to supplement description given in text.

Partial list of instruments which are described in bulletin includes wind speed and direction indicator and recorder, four-condition weather recorder and transmitter, rain gages, barometers, microbarograph, thermometers, thermographs, psychrometers, and relative humidity indicators.

Bul 10 is issued by Friez Instrument Div., Bendix Aviation Corp., Dept. CP, 1400 Taylor Ave., Baltimore 4, Md. When inquiring specify CP 8109 on handy form, pages 2 and 3.

### Mineral wool insulation reduces fuel consumption up to 40%

According to manufacturer, mineral wool insulation not only provides greater comfort and more healthful living conditions, but reduces fuel consumption up to 40%. Advantages of material include high efficiency, fire resistance, water repellency, non-conductivity, and sound-deadening and non-settling properties.

Eight-page bulletin deals with features, general specifications, application specifications, and applications. Bul A-129 is issued by The Eagle-Picher Co., Dept. CP, American Bldg., Cincinnati 1, Ohio. When inquiring specify CP 8110 on handy form, pages 2 and 3.

## FOR CONDENSER AND HEAT EXCHANGER TUBES AND PLATES SPECIFY

# Revere

CUPRO-NICKEL—30%, 10%

ADMIRALTY METAL

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ALUMINUM BRONZE—5%

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*Life extension for condenser tubes*

REVERE COPPER AND BRASS INCORPORATED

• Correct selection is essential if tubes and plates are to serve with the maximum economy and minimum trouble. The Revere Technical Advisory Service and Revere Research Department are always ready to collaborate with equipment manufacturers and operators in specification matters. • When it is time to re-tube, remember that conditions may have changed since the

original installation, and that it may be wise to re-check before ordering new tubes. • To take advantage of Revere's knowledge of copper and copper alloy tubes for all industrial purposes, get in touch with the nearest Sales Office. See your telephone book or write direct. Send for helpful booklet, "Life Extension for Condenser Tubes." Free.

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SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

When inquiring check CP 8111 on handy form, pgs. 2-3



## ALL-CHEM . . . the ALL-TEFLON and STAINLESS STEEL PUMP



Tired of figuring pump requirements for each new problem . . . Searching for solutions among a myriad of makes and models . . . Carrying a peck of replacement parts?

Standardize on Eco "All-Chem" Pumps—the universal pumps for lab., pilot plant and low volume chemical feed in production service.

The specs. are simple. Corrosion and contamination-wise, they handle anything stainless steel will handle.

They pump from 1 to 10 g.p.m. at pressures up to 70 p.s.i. They are positive displacement pumps with the highest suction lift over widest temperature and viscosity range.

Fluid delivery is non-deviating and non-foaming.

Adaptable to direct motor connection at 1750 RPM—or any other power source.

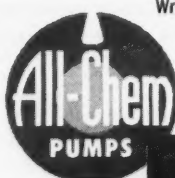
Self-priming on non-volatile liquids.

Unequaled for safe handling of such hazardous liquids as nitric acid and hydrogen peroxide.

Widely used in nuclear, guided missiles and other classified government installations.

Write for Bulletin A-3. Sent on request.

**ECO Engineering Company**  
12 New York Ave • Newark 1 • N.J.



# ECO

ENGINEERING COMPANY

When inquiring check CP 8112 on handy form, pgs. 2-3

## NEW LITERATURE

### Technical bulletin compares two types of DC drives

Comprehensive 8-page bulletin compares various features and specifications of adjustable voltage dc drives and constant potential dc bus systems. Aspects of equipment costs, installation costs, floor space requirements, maintenance, operating performance, reliability, flexibility, and efficiency are discussed relative to both systems.

Bulletin gives detailed discussion of advantages and disadvantages of each system with aid of graphs, performance curves, and engineering data. Bul GER-655 is issued by General Electric Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 8113 on handy form, pages 2 and 3.

### Describes dust collectors for fly ash control

Factual bulletin contains comprehensive information on use of aerodynamic-type dust collectors to solve problem of fly ash control. Topics which are discussed in bulletin include problem of fly ash control, design and operation of the dust collector, advantages of unit, and related equipment.

Bul 170 is issued by The Green Fuel Economizer Co., Inc., Aerodyne Div., Dept. CP, Beacon, N. Y. When inquiring specify CP 8114 on handy form, pages 2 and 3.

### Presents condensed information on water feeders and cut-offs

Illustrated bulletin contains capsule descriptions of boiler water feeders, feeder cut-off combinations, low-water fuel cut-offs, pump controllers, pressure relief valves, temperature relief valves, and combination temperature and pressure-relief valves.

Specifications are given for each individual unit, as well as design and construction features. Bul C-49 is issued by McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. When inquiring specify CP 8115 on handy form, pages 2 and 3.

### Mass spectrometer unit provides versatile method of analysis

Employing principle of ionization by electron bombardment, mass spectrometers may be used for control analyses, complex mixture analyses, exploratory analyses, purity determinations, and research investigations. Convenient technique employed in instrument allows as many as 30 or more components to be separately determined in mixtures of hydrocarbons, organic derivatives, and inorganic gases.

Uses, principle of operation, method of analysis, description of various components of instrument,

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**CHEMICAL PROCESSING**

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## FEON FABRICS Save ON ALL 4



### FILTER PRESS

FEON Dynel lasts 9 times longer than cotton in this pigment plant. Saves over \$2500 a year.



### STRING FILTER

FEON Nylon lasts a year under severe chemical conditions, compared to 6 weeks for cotton. Saves \$500 a year.



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Under less severe chemical conditions, FEON Nylon replaces heavy cotton, saves \$150 a year.



### DUST COLLECTOR

Hot copper sulfate dust clogged wool bags. FEON Nylon costs less, eliminates clogging, lasts longer.



Fabric selector chart, technical data, case histories. Send for it today.

## FILTRATION FABRICS DIVISION

FILTRATION ENGINEERS, INC.

155 Oraton St., Newark 4, N. J.

When inquiring check CP 8116 on handy form, pgs. 2-3

## NEW LITERATURE

performance characteristics, utilities and equipment needed for installation, specifications, and features are discussed. Bul CEC-1800B is issued by Consolidated Engineering Corp., Dept. CP, 300 North Sierra Madre Villa, Pasadena 15, Calif. When inquiring specify CP 8117 on handy form, pages 2 and 3.

### Floor drying material possesses high absorptive properties

Granular mineral compound, which is neither clay nor Fuller's Earth, possesses high absorptive properties for oil, grease, kerosene, water and other liquids that drop to the floor in industrial plant operations. It is a chemically inert, non-combustible material which is insoluble in the above liquids and, because of its light weight, gives good coverage.

Applications, features, and description of the compound are given in 4-page illustrated bulletin. Bul A-261 is issued by The Eagle-Picher Co., Dept. CP, American Bldg., Cincinnati 1, Ohio. When inquiring specify CP 8118 on handy form, pages 2 and 3.

### Hard-facing alloys resist wear, erosion, and heat

Powdered hard-facing alloys which resist wear, heat, erosion and corrosion may be applied and fusion-bonded to metal parts by a spray-type process. According to manufacturer, process combines advantages of welding and metallizing practice. Result of process is a molecular or fusion bond between the sprayed overlay and the base metal.

Equipment, advantages and method of application of fusion-bonding process are described in 4-page bulletin. "The Colmonoy Spraywelder" is issued by Wall Colmonoy Corp., Dept. CP, 19345 John R St., Detroit 3, Mich. When inquiring specify CP 8119 on handy form, pages 2 and 3.

### Stabilizes rayon, rayon blends to make them washable

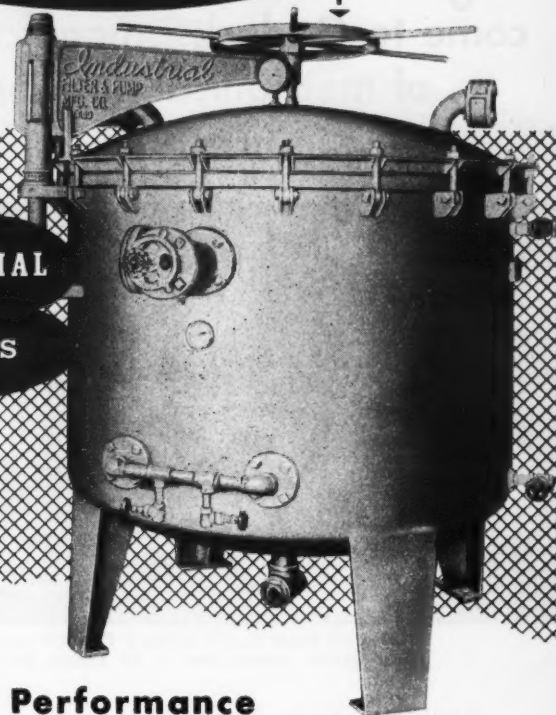
Chemical, known as X-2, permanently stabilizes rayon and rayon-blend fabrics, making them completely washable and adding other desirable properties. Procedures and formulas for applications of the chemical have been made available in earlier bulletins, but revised bulletin shows that some steps in procedure have been eliminated and others shortened. This revision effects various economies without affecting in any way the results in the finished products.

Bulletin describing revised procedures and formulas is issued by Dan River Mills, Chemical Development Div., Dept. CP, Danville, Va. When inquiring specify CP 8120 on handy form, pages 2 and 3.

# FILTRATION

ANY SOLUTION  
ANY QUANTITY

## INDUSTRIAL Filters



## Bonus Performance with Lasting Reliability

The engineering and construction features of INDUSTRIAL filters add up to maximum clear filtrate with less floor space, greater operating conveniences, and less maintenance delays and expense. The general design permits the use of the materials best suited to the solution requirements. Vertical filter leaves with ample flow space on both sides offer maximum filtration area. Outside lockup simplifies the installation of filter leaf and bag assemblies. An exclusive air-wash cleaning method practically eliminates the usual labor and inconvenience of dismantling the filter after every cycle. INDUSTRIAL filters are often in operation for months without removing the cover — cutting downtime to a minimum. All these features have been proved in long-life service — your assurance of dependable bonus performance.

Full particulars and recommendations on any filtration job will be given upon request.

# INDUSTRIAL

## FILTER & PUMP MFG. CO.

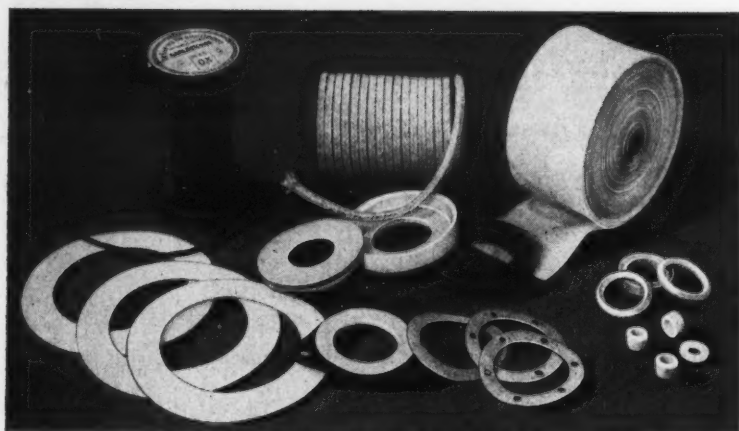
5908 Ogden Avenue, Chicago 50, Illinois

PRESSURE FILTERS  
DEMINERALIZERS  
RUBBER LININGS

When inquiring check CP 8121 on handy form, pgs. 2-3



When it comes to  
**Teflon\* PACKINGS and GASKETS**  
come to Garlock...manufacturers  
of mechanical packings  
since 1887



Above—A few of the wide variety of TEFLON packings and gaskets manufactured in the Garlock factories.

GARLOCK pioneered in the design and manufacture of packings and gaskets made of TEFLON. Garlock products made of TEFLON are unaffected by acids, organic solvents and other chemicals at operating temperatures from below  $-90^{\circ}\text{F}$ . up to  $500^{\circ}\text{F}$ . These packings and gaskets are ideally suited for many other applications due to TEFLON's low coefficient of friction.

We have the facilities to mold, machine, or form TEFLON in a wide variety of shapes and sizes for packing and gasketing. When you need finished TEFLON parts contact your Garlock representative or write for our TEFLON Catalog.

THE GARLOCK PACKING COMPANY  
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In Canada: The Garlock Packing Company  
of Canada Ltd., Toronto, Ont.



\*The DuPont Company's Trademark

**GARLOCK**  
PACKINGS, GASKETS, OIL SEALS,  
MECHANICAL SEALS,  
RUBBER EXPANSION JOINTS

When inquiring check CP 8122 on handy form, pgs. 2-3

NEW LITERATURE

**Catalog describes personnel tests**

Informative 32-page catalog presents descriptions of various types of personnel tests and other employee relations materials. Five categories of material are discussed: general personnel tests, tests for shop and factory personnel, tests for clerical and office personnel, training devices, and books and booklets.

Section on general personnel tests includes descriptions of evaluation and selection materials, intelligence tests, job-interest tests, personality tests, and reading tests.

"A Catalog of Personnel Materials" is issued by Science Research Associates, Dept. CP, 57 W. Grand Ave., Chicago 10, Ill. When inquiring specify CP 8123 on handy form, pages 2 and 3.

**Describes features of dryer units**

Nine features and pertinent specifications of refrigerant dryers are presented in 4-page bulletin. Four types of dryer units and two types of cartridges are described.

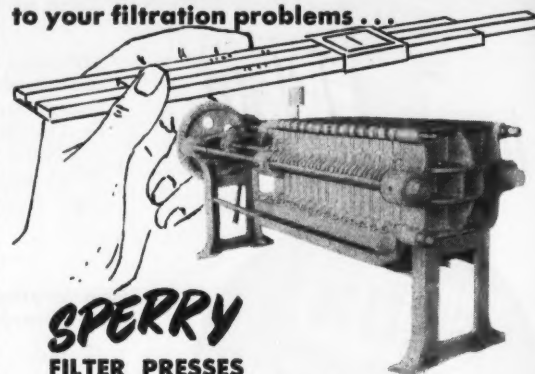
Bul 700 is issued by Henry Valve Co., Dept. CP, 3215 North Ave., Melrose Park, Ill. When inquiring specify CP 8124 on handy form between pages 2 and 3.

**Shows applications of metallizing**

Use of metallizing in repairing worn crank shafts, pump packing sleeves, press rams, turbine rotors and stators, rolls, motor shafts, pistons, and cylinders are but a few of the applications for metallizing illustrated in 8-page bulletin. Other applications described include repair of blow holes in castings, use of process in brazing and soldering, electrical shielding and circuits, in model work, molds for plastics, and in glass and ceramics.

Bul 51A is issued by Metallizing Engineering Co., Inc., Dept. CP, 38-14 30th St., Long Island City 1, N. Y. When inquiring specify CP 8125 on handy form, pages 2 and 3.

for the exacting answers  
to your filtration problems...



**SPERRY  
FILTER PRESSES**

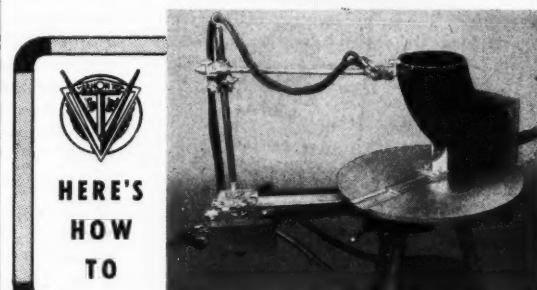
When you consider the many advantages of Sperry Filter Presses, you can quickly understand why hundreds of manufacturers throughout the country depend on Sperry for solving industrial filtration problems of every kind.

Sperry Filter Presses offer greater economy—low first cost, minimum maintenance and long life... require less floor space... handle any kind of filterable mixture... and use practically any kind of filter material. For the complete story, ask for the big free Sperry catalog.

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When inquiring check CP 8126 on handy form, pgs. 2-3



HERE'S  
HOW  
TO

**Save WELDING FITTINGS**

Use this new precision "Universal" Flame Cutter for re-working, reconditioning and salvaging all types of new and used welding ell, tees, flanges, reducers, etc. Makes extremely clean cuts... no cleaning or hand fitting required. Adjustable degree plate permits fitting to be cut at any angle. Has unitized control panel and unitized gas control valve.

**WHAT THE VERNON "UNIVERSAL" FLAME CUTTER DOES**

- Shortens ell, tees, flanges, reducers, etc.
- Miter welding neck flanges.
- Re-cuts and bevels used ell, tees, swedges, returns.
- Reconditions welding neck and slip-on flanges.
- Reams extra heavy fittings to standard.
- Cuts small miters...  $22\frac{1}{2}^{\circ}$  or less.
- Cuts holes in blanks for slip-on reducing flanges.
- Cuts and bevels short pieces of pipe to  $36^{\circ}$  diameter.
- Makes swedges out of welding caps.
- Cuts miter elbows.

THE NEW VERNON

Write for Bulletin FC-2

**"Universal" FLAME CUTTER**

**VERNON TOOL CO., LTD.**  
Vernon PIPE CUTTING PANTOGRAPH  
Vernon "Universal" FLAME CUTTER  
Brown STEEL VALVES  
Vernon-Ormeco TUBE EXPANDING MACHINE

1101 Meridian Ave.  
Alhambra, Calif.

P.O. Box 7555  
Houston, Texas

When inquiring check CP 8127 on handy form, pgs. 2-3

### Complete power unit for trucks contained in compact turret

Compact turrets, designed to be interchangeable on all trucks in complete line of horizontal material handling units, incorporate complete power unit for the truck itself. In addition to 6-hp air-cooled engine, turret contains steering and starting mechanisms, solid cushion tire, brakes, carburetor and flywheel, and throttle mechanism.

Trucks may be used for horizontal material handling jobs in every kind of industry and will move any material or merchandise that can be palletized, handled on skids, in tote boxes, or loaded on a platform. They are available in five models — pallet, tug, platform, auto-loader, and cargo units.

Specifications and features of trucks are described in 8-page bulletin. Bul 1217 is issued by Hyster Co., Dept. CP, 2902 N. E. Clackamas St., Portland 8, Ore. When inquiring specify CP 8128 on handy form, pages 2 and 3.

### Engineering catalog describes features of flexible tubing

Detailed specifications, information on oil and chemical resistance, and applications for flexible tubing are contained in 8-page bulletin. Designed for ventilation, fume and dust removal, and material handling applications, tubing is highly flexible, lightweight product made from continuous helical coils of spring wire wound with overlapping plies of specially-treated multi-coated fabric.

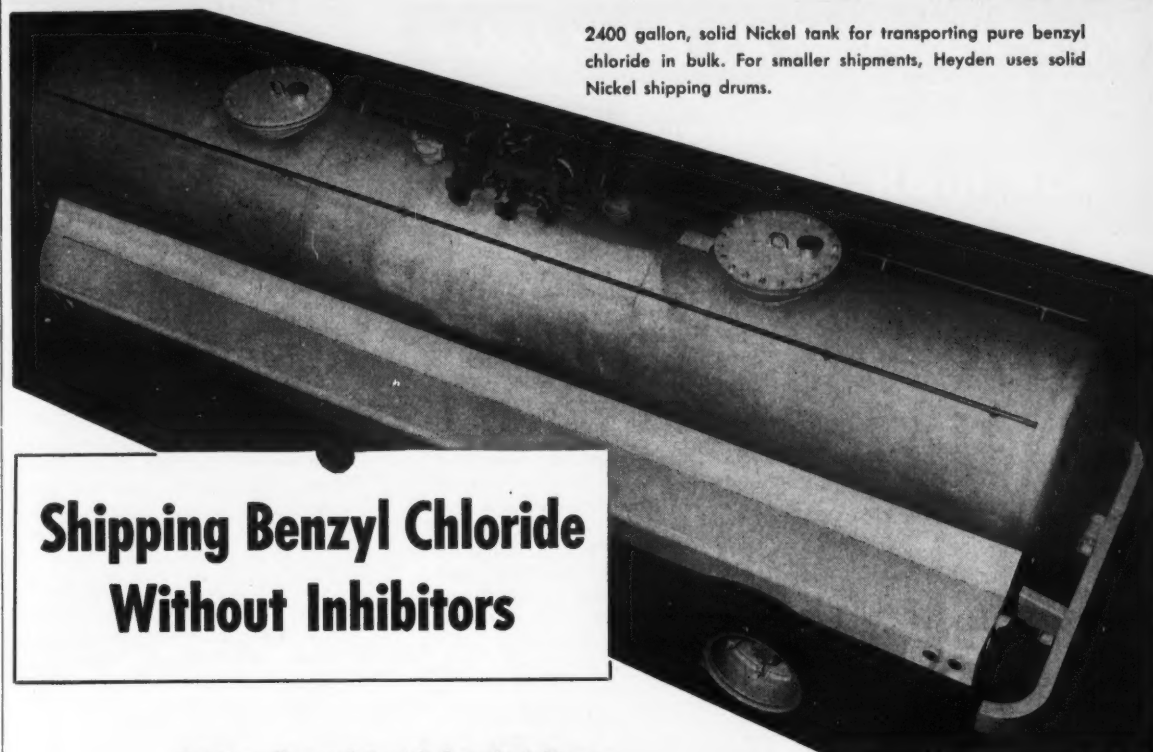
Tubing is available in two basic types — one type is designed for ventilation, dust removal, fume disposal, and similar applications (either blowing or exhausting), and other type is built-up with extra thicknesses of rubber, Neoprene, or other polymers, and is designed for material handling, and installations for carrying such products as carbon black, sugar, cotton, dry cement, flour, and dry chemicals.

Cat C2-4 is issued by Flexible Tubing Corp., Dept. CP, Guilford, Conn. When inquiring specify CP 8129 on handy form, pages 2 and 3.

### High capacity butterfly valves regulate air, gas, or liquids

Designed to regulate flow of air, gas, liquids or steam, high capacity butterfly valves are used in connection with indicating, recording, or non-indicating pneumatic controllers. Four-page bulletin contains description of unit, specifications, applications, power units, and valve sizing.

Bul 8503 is issued by Station 64, Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8130 on handy form, pages 2 and 3.



2400 gallon, solid Nickel tank for transporting pure benzyl chloride in bulk. For smaller shipments, Heyden uses solid Nickel shipping drums.

## Shipping Benzyl Chloride Without Inhibitors

**2400 gallon solid nickel tank delivers corrosive chemical pure and colorless**

Heyden Chemical Corp., Fords, N. J., wanted to eliminate the extra step of reprocessing benzyl chloride after shipping.

They wanted a container that would protect the original purity of the chemical and they wanted it large enough to permit large bulk shipments between their plants.

The Cleveland, Ohio firm of Glascote Products, Inc., gave them the answer to their problem.

Glascote fabricated a solid Nickel tank trailer with two compartments—each with a capacity of 1200 gallons. The tanks, of welded construction, were also equipped with Nickel fittings so that no contamination could take place during filling and emptying.

The tank trailer has now been in operation over a year and a half. And Heyden is now able to make satisfactorily large

shipments of pure benzyl chloride. At the same time they have eliminated the time and expense of reprocessing.

Like Heyden, many a chemical manufacturer and processor is relying on Nickel for purity protection in storage and transportation. And because of its high resistance to many corrosive media, Nickel requires only a minimum of maintenance. This assures long-range economies far outweighing original installation costs.

Today, with Nickel and Inco Nickel Alloys on extended deliveries, it will pay you to anticipate your needs. Order well in advance, giving necessary N. P. A. ratings and complete end use information. Remember, also, if you have a special metal problem, consult our Technical Service and Corrosion Engineering Sections. They will be glad to help you. Just write, giving full details.



**THE INTERNATIONAL NICKEL COMPANY, INC.**  
67 Wall Street, New York 5, N. Y.

When inquiring check CP 8131 on handy form, pgs. 2-3



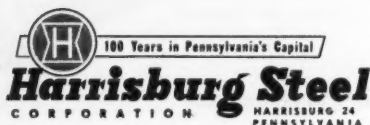
# JUST AS GOOD AS THEY LOOK!

## HARRISBURG CYLINDERS FOR HIGH-PRESSURE GASES



What brand of cylinders do you use in your plant? Do you know? The reliability of the cylinders in which you store or transport your high-pressure gases is important. That's why buying the best is just good business.

Harrisburg Steel, pioneer and world's largest manufacturer of seamless steel high-pressure gas cylinders made to I.C.C. Specifications, offers you a complete range of sizes, capacities, and both domestic and export types. Write for literature and prices, today!



When inquiring check CP 8132 on handy form, pgs. 2-3

for  
• SPRAYING • WASHING • RINSING • COOLING • AIR CONDITIONING

Get the most out of your Spraying Equipment with minimum power... with efficient spraying.

Use Yarway Nozzles. No internal vanes or other restrictions to clog or hinder flow. Two types—Yarway Involute-type producing a fine hollow spray with minimum energy loss, and Yarway fan-type producing a flat fan-shaped spray with time-saving slicing action for cleaning.

Wide range of standard sizes and capacities. Cast or machined from solid bar stock.

Thousands in use. Write for Bulletin N-616.

## YARWAY SPRAY NOZZLES

YARNALL-WARING COMPANY  
125 Mermaid Avenue, Philadelphia 18, Pa.

INVOLUTE-TYPE FOR HOLLOW CONE SPRAY



FAN-TYPE FOR FLAT SLICING SPRAY

When inquiring check CP 8133 on handy form, pgs. 2-3

## NEW LITERATURE

### Presents information on steam boilers

Comprehensive catalog describes features, applications, and specifications of complete boiler units, consisting of boiler proper together with gas-fired burner and necessary control devices.

Individual units are described in separate sections which outline various features of design and construction together with various applications for equipment. Advantages of vertical boilers are discussed in addition to a special type unit for use with hard water. Specification and dimension information is given in handy table.

Cat A-107 is issued by Eclipse Fuel Engineering Co., Dept. CP, 1002 Buchanan St., Rockford, Ill. When inquiring specify CP 8134 on handy form, pages 2 and 3.

### Features information on metering pumps

Current issue of house organ published by manufacturer of laboratory equipment features information on stainless steel metering pumps as well as article regarding a pipet control system. Other recent developments in field of laboratory apparatus are reviewed.

"Cenco News Chats" is issued by Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. When inquiring specify CP 8135 on handy form, pages 2 and 3.

### Engineering, planning of control panels

Illustrated, 8-page booklet points-out advantages of complete engineering and planning service offered by manufacturer of panels. Numerous panel designs are illustrated, along with methods of tubing and wiring. Separate section deals with panel accessories.

Bul 170 is issued by Bailey Meter Co., Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio. When inquiring specify CP 8136 on handy form, pages 2 and 3.

## Naturally the Best!

## MARLEY Natural Draft Cooling Towers



- **MARLEY DESIGNED** to minimize drift but to take advantage of air flow!
- **BALANCED SPRAY SYSTEM** with patented Marley nozzles!
- **RUGGED CONSTRUCTION** of heart red-wood lumber.
- **DELIVERY** when and where you want it from stocks in many cities. Prefabricated for easy field assembly.

Call your local Marley Representative



**The Marley Company**

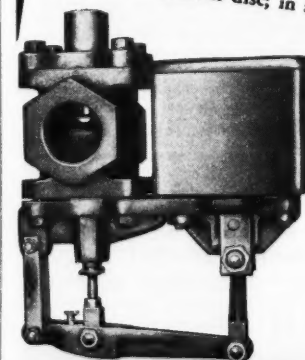
Kansas City 5, Missouri

When inquiring check CP 8137 on handy form, pgs. 2-3

Acting Solenoid Valve — for 150 lbs. Differential Pressure

**JOHNSON Direct**  
You can get a solenoid valve that operates under differential pressures up to 150 lbs., temperatures to 400°F., without pilot valves. It ends the time lag and wire-drawing that come with slow opening of automatic, or remote, flow control. Johnson Solenoid Valves are available for normally closed or normally open service; with stainless steel valve and seat or Jenkins disc; in sizes from 1/2" to 3".

Write for  
Bulletin "V"



WHERE CAN  
YOU USE THIS  
AUTOMATIC VALVE?

- No pilot valves
- Temperatures to 400°F.
- Differential Pressures to 150 lbs.
- Immediate full flow
- Heavy duty construction

**The Johnson Corporation**

826 WOOD ST.

THREE RIVERS, MICHIGAN



When inquiring check CP 8138 on handy form, pgs. 2-3

CHEMICAL PROCESSING

### Process control instruments aid pulp and paper mill operation

Principal features and applications of complete line of process control instruments to pulp and paper mill operation are outlined in 24-page bulletin. General categories discussed and illustrated include: flow meters, devices for level measurement, instruments for consistency measurement, and viscometers. Instrument panels, pneumatic controllers, and control valves are described as well as instruments for measuring and recording temperature and pressure, and specific gravity.

Mill installation photographs, flow diagrams, and drawings illustrate individual products. In addition, manufacturer's complete engineering service and facilities are pictured. Bul A-130-1 is issued by Fischer & Porter Co., Dept. CP, 7240 County Line Rd., Hatboro, Pa. When inquiring specify CP 8139 on handy form, pages 2 and 3.

### Highly reactive methylamines have variety of uses

The simplest members of the alkylamine series — monomethylamine, dimethylamine, and trimethylamine — represent the most economical source of the amine group due to their low equivalent weights and moderate price. They are highly reactive water-soluble gases possessing an ammoniacal odor and are utilized primarily for synthesis and as neutralizing agents when inorganic alkalis are unsuitable.

Methylamines are useful as vulcanization accelerators; in manufacture of fungicides and insecticides; as herbicides; in synthesis of dyes, drugs, and pharmaceuticals; as catalysts and accelerators; and as polymerization inhibitors, in addition to other numerous uses.

Technical Data Sheet 12 presents useful technical information regarding properties, specifications, uses, chemical reactions, and toxicity of the methylamines. Bulletin is issued by Commercial Solvents Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. When inquiring specify CP 8140 on handy form, pages 2 and 3.

### No compressor required for combustion air

Gas-air inspirators for any usual fuel gases at 1 to 30 lb pressure, and high pressure air-gas boosters for use with low pressure gas give maximum entrainment, streamlined flow, and better control, according to manufacturer. Inspirators require no blower or compressor for combustion air, while boosters use only small quantity of high pressure air to inspire atmospheric air. Units are useful in connection with industrial furnaces, ovens, kilns, and dryers.

Cat 806A is issued by Hauck Manufacturing Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. When inquiring specify CP 8141 on handy form, pages 2 and 3.



## "Drycleaners' Rx" for filtering solvent crystal-clear

MODERN drycleaning plants have discovered that the prescription for keeping their cleaning fluid crystal-clear . . . an absolute necessity if garments are to be thoroughly cleaned . . . is Celite\* filtration.

The effectiveness of Celite can be attributed to these important factors which make it unique among filter aids:

Carefully processed from the purest deposit of diatomaceous silica known,

Celite is available in nine standard grades—each designed to trap suspended impurities of a given size and type. Whenever you reorder, you are assured of the same uniform, accurately graded powder received in your initial order. Thus, with Celite, you can count on consistent clarity and purity in your filtrates—at highest rate of flow—month after month, year after year.

Drycleaning solvent is just one of

many liquids for which Celite has provided the absolute clarity vital to a successful operation. The proper grade of Johns-Manville filter aid will assure you the same results—regardless of the product or process involved. To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 60, New York 16, New York. No cost or obligation.

\*Reg. U. S. Pat. Off.



# Johns-Manville CELITE

## FILTER AIDS

When inquiring check CP 8142 on handy form, pgs. 2-3





## Can you guess How Much it cost to mail you this copy of **CHEMICAL PROCESSING**?

29c . . . if you live in San Francisco. 20 1/2c if your home is in New York; 26c to Portland; 23c to Miami; 11 1/2c if you live here in Chicago. That means \$1.38 to \$3.48 per year . . . for postage alone. Yet this magazine comes to you without charge.



### Why do we do it?

Why don't we demand that you buy a subscription? Well, strange as it may seem, it usually costs more to sell a subscription than the publisher gets out of it . . . and a good many important men simply can't be reached when selling subscriptions.

### Then where DO publishers' dollars come from?

Contrary to what many folks think, subscription revenue is hardly a "drop in the bucket" of a publisher's income. Most all of it must come from the advertising sold.

So the publisher must get maximum readership from the maximum number of readers in the field . . . from men like yourself . . . so his advertising pages will be of greatest value.

### Advertisers demand best coverage.

Since the advertisers pay the bills, the publisher can succeed only as he publishes the most readable mag-

azine and then gets the best possible coverage of the best readers in the field.

And, as you can see, the most effective method of getting such coverage is (a) to hand-pick the most important men, (b) send the magazine to ALL of these men, and (c) make it so valuable, so interesting that they will want to read it.

That's why you get **CHEMICAL PROCESSING** . . . without charge. You are important in chemical processing, hence you are important to our advertisers, hence you are important to us as publishers. That's why we spend many thousands of dollars on every issue of **CHEMICAL PROCESSING**, to make it of top interest to you in your work — to make every issue more than worth your reading time. That's why **CHEMICAL PROCESSING** comes to you without charge.



## **CHEMICAL PROCESSING**

111 East Delaware Place

Chicago 11, Ill.

Published by **PUTMAN PUBLISHING COMPANY**

Creators of **PUTMAN-STYLE** Magazines  
... terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more **READER ACTION**

MEMBER OF NATIONAL BUSINESS PUBLICATIONS, INC. & CONTROLLED CIRCULATION AUDIT, INC.

## NEW LITERATURE

### **CO detector measures, records from 0 to 0.05% of CO**

Improved hopcalite-type apparatus produces sensitive analysis and continuous record of concentration of carbon monoxide in air in range of 0-5 parts per ten thousand. Unit may be incorporated into system with an alarm to indicate when concentration of CO reaches dangerous proportions, or equipment may be used to control a ventilation system. Unit is fully automatic and its operation depends upon voltage generated by exothermic heat of reaction from combustion of CO in a thermopile.

Illustrated bulletin gives description of unit and its various components, tells features, outlines principle of operation, and gives specifications. Bul 201 is issued by Taller & Cooper, Inc., Dept. CP, 75 Front St., Brooklyn 1, N. Y. When inquiring specify CP 8143 on handy form, pages 2 and 3.

### **Use of silicone insulation allows uprating of motors**

Manufacturer's and production tests indicate that the power per pound ratio of motors may be increased by as much as 50% by the use of Class H silicone insulation. In addition, these tests have indicated that this Class H insulation has a temperature advantage of about 100°C over Class B insulation.

Silicone insulation is useful where overloads cause frequent failure, where high ambient temperatures limit life of ordinary motors, where rapidly reversing service causes premature failure, where ordinary motors fail because of excessive moisture plus occasional flooding, and where the cost of down-time is prohibitive.

Illustrated bulletin outlines features and possible applications for silicone insulation in addition to outlining specifications of various forms of the insulation. Bul 10-100 is issued by Dow Corning Corp., Dept. CP, Midland, Mich. When inquiring specify CP 8144 on Reader Service slip between pages 2 and 3.

### **Reproduces one or more factors for environmental testing**

Custom-built environmental test chambers are available for producing a wide variety of environmental testing conditions. These chambers can reproduce one or more test factors, such as temperature, pressure, humidity, sunshine, rain, salt spray, fungus, vibration, and dust. Extensive instrumentation is employed, and test variables are measured, controlled, and recorded within precise limits.

Sizes and designs on individual chambers vary from small "reach-in" cabinets with a volume of less than one cubic foot to large room-size "walk-in" chambers, or even complete buildings are outlined.

Four-page bulletin includes discussion of applications, equipment requirements, basic instrumentation, temperature measurement and control, relative humidity measurement and control, and general description. Instrumentation Data Sheet No. 11.0-6 is issued by Station 64, Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 8145 on handy form, between pages 2 and 3.

#### Resin-type core binders reduce baking time

Two types of urea-formaldehyde resin used in foundry industry to bind cores, speed up production of cores by reducing baking time from 33 to 50% of that required for oil binders, according to manufacturer of resins. In addition, use of resins makes possible lower baking temperatures, thus cutting fuel costs.

Core-binding resins are available in two types: 1) an extremely stable, dry, powdered urea-formaldehyde resin particularly effective for dry sands, and 2) a low viscosity urea-formaldehyde resin solution suitable for use with both wet and dry sands.

Properties of the resins, formulations, mixing procedures, baking procedures, and storage are discussed in "CYACOR Resins — Their Use as Core Binders" issued by Plastics Dept., American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 8146 on convenient Reader Service slip, pages 2 and 3.

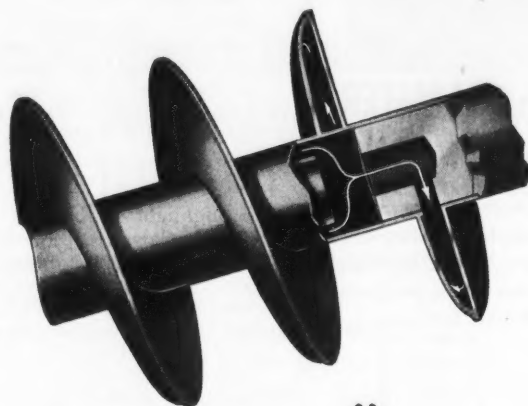
#### Versatility, weight are features of diatomaceous silica

Light weight, purity, porosity, amorphous structure, high fusion point, and low thermal conductivity make diatomaceous silica a versatile material for industrial applications. Varying with grade, particle size ranges from aggregates approximately 1 inch in diameter down to fine powders having an average particle size of 5 microns.

Material is useful as high temperature insulation, filter-aid, filler and bulking agent in papers, flattening agent and extender in paints, filler in plastic products and rubber goods. In addition, diatomaceous silica is used as a filler in polishes and cleansers, carrier for fertilizers and catalysts, filler for asphalt products, and as a concrete admixture.

Bul A-236 is descriptive illustrated bulletin which discusses properties, processing, uses, and features of the material. Bulletin is issued by The Eagle-Picher Co., Dept. CP, American Bldg., Cincinnati 1, Ohio. When inquiring specify CP 8147 on handy form, pages 2 and 3.

#### A great new advancement in heat exchangers...



### THE **holo-flite** PROCESSOR (HOLLOW-FLITE)

*A simpler, more compact way to cool  
slurries, solids or pastes—in continuous flow!*

Do you have processes where slurries, solids, pulps or pastes must be cooled or cooked? Do you know you can now handle such processes—in continuous flow—in as little as 1/5th the space required by other types of heat exchangers—and with many other important advantages?

**The newly-developed HOLO-FLITE Processor is the answer!**



## what IT IS!

Basically the HOLO-FLITE consists of two or more flights of hollow-bladed screw conveyors. The product to be processed moves in a trough around the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums—as the product is continuously moved along in a bulk-flow without interruptions!

Get the complete story on HOLO-FLITE savings and how this new advancement can simplify your processing operations. It is backed by the same organization that pioneered COTTRELL Precipitators and MULTICLONE Collectors—your assurance of complete dependability.

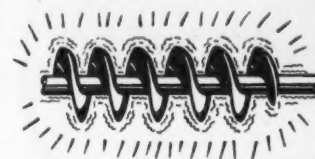
•Reg. T.M.



**DETAILED INFORMATION!**  
New 8 page bulletin describing HOLO-FLITE features and applications will gladly be sent on request. Write, wire or phone for your free copy!

## why IT'S BETTER!

The HOLO-FLITE principle provides many important advantages in modern processing operations...



**ITS LARGE HEAT-TRANSFER SURFACE** requires far less space—as little as 1/5th the space required by other heat-exchange equipment. Further, flights can be "stacked" as high as desired to save floor space, simplify installation!



**ITS SLOW ROTATION IS SO GENTLE** that granular and powdered solids are handled with no dusting—little or no particle abrasion. Result—no dust recovery problems... simple, inexpensive installation.



**IT IS ADAPTABLE** to a wide range of applications—handles solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, water or other fluids to provide a wide range of temperatures. Cooled products can be packed directly from HOLO-FLITE discharge, saving time, space and additional handling.



**IT CAN BE DESIGNED** to handle virtually any capacity by varying the diameter and length of the flights, and the number of "tiers."

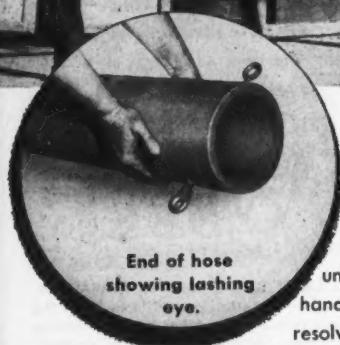
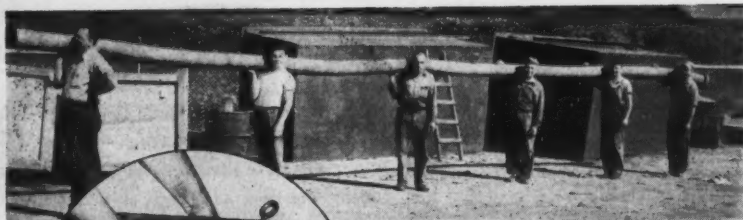
## WESTERN **Precipitation** CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR  
COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 8148 on handy form, pgs. 2-3



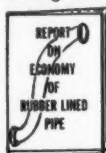


## 6 inches in DIAMETER by 35 feet LONG

**T**HIS all-rubber hose for conveying citric acid as part of loading and unloading facilities is also subjected to rough handling. It is typical of some of the problems resolved by La Favorite Rubber Engineering.

In any situation involving protection against corrosion, erosion or abrasion in processing, conveying or storing, consult our Rubber Engineering Department. The advice of La Favorite engineers can be very helpful and may be valuable in saving substantial sums in original investment and maintenance. Consult them freely, without obligation.

Send for report #366.



This report may stimulate your thinking on the possible savings with the use of La Favorite Rubber.

# LA FAVORITE RUBBER MFG. CO.

267 Wagaraw Road

Hawthorne, N. J.

RUBBER LININGS

RUBBER COVERING

RUBBER ENGINEERING

When inquiring check CP 8149 on handy form, pgs. 2-3

## What's A "New Solution"?

It's an article in **CHEMICAL PROCESSING** describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

## NEW LITERATURE

### Detailed information on heat exchangers

Twenty-page bulletin presents complete data regarding heat exchanger design and performance. Included in section are details of mechanical and performance design, tube sheet layout with table, standard construction, and illustrated examples.

A highlight of bulletin is a partial analysis of the ASME code for unfired pressure vessels. Bulletin entitled "Plate Fabrication and Heat Exchangers" is issued by Downingtown Iron Works, Dept. CP, Downingtown, Pa. When inquiring specify CP 8150 on handy form, pages 2 and 3.

### Describes production, fabrication of metals

Twelve-page, illustrated bulletin shows facilities for production of metals and their fabrication into variety of products. Included in products described are precious metals, electrical contacts, and specialty alloys. Of particular interest are sections devoted to discussion of platinum-group metals, manganese age-hardening alloys, and two special methods of rolling metals.

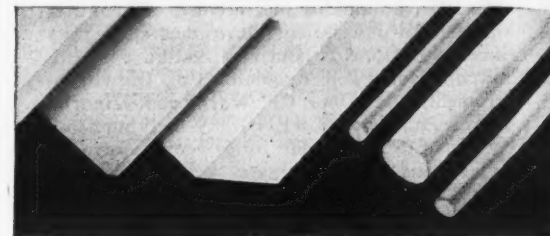
Bul PR700 is issued by Metals & Controls Corp., General Plate Division, Dept. CP, Attleboro, Mass. When inquiring specify CP 8151 on handy form, pages 2 and 3.

### Lists fifteen items for laboratory

Illustrated 4-page folder describes 15 items of equipment for laboratory use. Items contained in bulletin include polyethylene bottles and funnels, polyethylene tubing, manometers, automatic burets and pipets, laboratory jackets, static eliminators, and heating tape.

Bulletin describing laboratory equipment is issued by E. Machlett & Son, Dept. CP, 220 E. 23rd St., New York 10, N. Y. When inquiring specify CP 8152 on handy form, pages 2 and 3.

Need **TEFLON\*** immediately  
— and with optimum properties?



Get **FLUOROFLEX-T®** sheet, rod  
from a complete stock of sizes

"Teflon" powder is processed in new equipment expressly engineered to yield Fluoroflex-T products with optimum inertness and stability. Rigid control assures complete uniformity in Fluoroflex-T for better machinability and freedom from internal strains, cracks or porosity.

Because Teflon withstands -110°F to +500°F, is self-lubricating, and unaffected by virtually all chemicals . . . Fluoroflex-T becomes your best choice for packings, gaskets or seals. Write for new bulletin with technical data. RESISTOFLEX CORPORATION, Belleville 9, N. J.

\*DuPont trade mark for its tetrafluoroethylene resin.  
© Resistoflex trade mark for products from fluorocarbon resins.

## RESISTOFLEX

For out of the ordinary engineering with synthetics  
When inquiring check CP 8153 on handy form, pgs. 2-3

for all threads, flanges and fittings  
subject to high temperature . . .

**LEADING CHEMICAL PLANTS**  
now standardize on



- ✓ speeds up dis-assembly time!
- ✓ prevents stud breakage!
- ✓ eliminates pitting of stainless steel!

Many leading chemical plants have proved through exhaustive field and laboratory tests that coating all threaded assemblies with Fel-Pro C-5 "Hi-Temp" will greatly reduce operational and maintenance costs.

Fel-Pro's exclusive Colloidal-Copper formula allows for easy separation and reduces stud breakage of threaded assemblies after long exposure to extreme temperatures. It eliminates galvanic pitting of stainless and alloy steel even where dissimilar metals are joined.

Conduct your own tests with C-5 "Hi-Temp" at our expense. See how it can lick your toughest thread breakage problems . . . Write for FREE Sample and complete data sheet TODAY!

**FELT PRODUCTS MFG. CO.**

1515 Carroll Ave., Chicago 7, Illinois 6163 CP

When inquiring check CP 8154 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Transmission systems facilitate liquid measurement, control**

Pneumatic, magnetic, electric, electronic, and electronic-follower transmission systems provide methods for measurement and control of flow, pressure, liquid level, viscosity, and specific gravity.

Pneumatic system converts linear motion into a proportional air pressure and transmits reading to a pressure-measuring secondary instrument. Magnetic system provides frictionless coupling for integral-mounted secondary instruments. Electric system offers simple and powerful resonant circuit impedance bridge for accurate transmission to remote secondary instruments. Electronic system operates on continuous stepless principle to follow linear motion of a primary sensing device. Electronic-follower is useful where accuracy is desired in transmission of low flow rates.

Specifications, performance characteristics, and schematic diagrams of various systems are contained in illustrated 20-page bulletin. Cat T-50 is issued by Fischer & Porter Co., Dept. CP, 7250 Jacksonville Rd., Hatboro, Pa. When inquiring specify CP 8155 on handy form, pages 2 and 3.

**Describes controllers for liquids, gases**

Thirty-two-page booklet lists many types of controllers, gages, manometers, valves, and venturi tubes for measurement and control of liquids and gases. Descriptions of units, operating characteristics, construction details, mountings, specifications, and other data are presented in illustrated bulletin.

Cat 003 is issued by Simplex Valve and Meter Co., Dept. CP, 68th and Upland Sts., Philadelphia 42, Pa. When inquiring specify FP 8156 on handy form, pages 2 and 3.

**Reagents and solutions aid in gas analysis**

Four-page illustrated bulletin presents descriptive information regarding various reagents and auxiliary solutions which facilitate procedures of gas analysis. Various reagents which are designed for analysis of various gases by absorption technique include an absorbent for carbon monoxide, one for the determination of illuminants, one for the determination of oxygen, and one for the determination of carbon dioxide.

Descriptions are given for four reagents designed for absorption of specified unsaturated hydrocarbons — total olefins, ethene, propene, butene, pentenes, iso-butene, acetylene, and higher members of the acetylene series.

Bul 327 is issued by Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. When inquiring specify CP 8157 on handy form, pages 2 and 3.

**AMERICAN CHEMICAL PAINT COMPANY**

AMBLER  PENNA.

## Technical Service Data Sheet

### Subject: HOW GRANODIZING PROTECTS STEEL DRUM SURFACES FROM RUST AND IMPROVES PAINT ADHESION

**NEW DEVELOPMENT IN CONTAINER INDUSTRY**

United States Steel Products Division, United States Steel Company is now producing grease-free, scale-free, rust-inhibited steel drums. A chemically clean metal surface plus a "Granodine" non-metallic zinc phosphate coating insures maximum finish durability and underpaint rust-resistance.



ORDINARY PAINTED DRUM after a year of exposure to weather is badly rusted. Rust was very apparent after only one week.

U. S. S. RUST-INHIBITED DRUM of similar type shows absolutely no rust after same year's test.

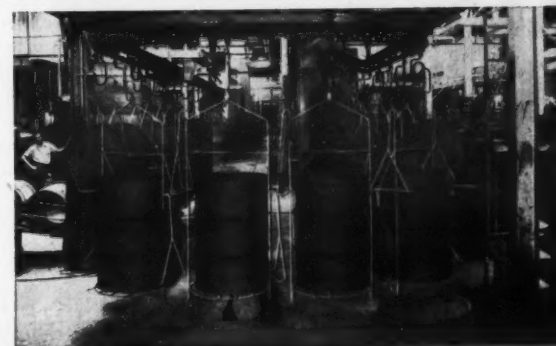
**THE PROTECTIVE CHEMICAL TREATMENTS**

The Granodizing process embodies the following steps:

1. Grease and dirt removal
2. Full scale removal, after welding the side seam
3. Zinc phosphate coating with "Granodine"
4. Acidulated rinsing in "Deoxylyte" solution



WRITE FOR INFORMATION ON "GRANODINE" AND ON YOUR OWN METAL PROTECTION PROBLEMS



Port Arthur, Texas, Cleaning Line

U. S. S. drums about to enter the 400 foot cleaning and treating line. Powerful impingement sprays directed at the fabricated shell, head, and bottom, insure that the entire interior and exterior of the drum will receive full cleaning and rust-inhibiting treatment.

**ADVANTAGES OF GRANODIZED STEEL DRUMS**

These new phosphate-coated steel drums exhibit many advantages for companies using these containers.

They are chemically clean, "water-break free" inside, free of contaminating residues such as grease, oil, drawing and stamping compounds. When the familiar handkerchief test is applied to United States Steel Products' containers processed by their new finishing technique, no contamination of any kind is left on the cloth.

They are free of mill-scale. United States Steel Products is the first steel drum manufacturer to remove harmful mill scale completely ahead of the zinc phosphate coating stage.

They are rust-inhibited with a zinc phosphate-coating. These new steel drums have the added advantage of a non-metallic, paint-bonding "Granodine" zinc phosphate coating. This has been standard practice for many years in the automotive and appliance industries for long-lasting paint protection and metal preservation.

When inquiring check CP 8158 on handy form, pgs. 2-3



# IN A FILTER OR STRAINER IT'S

*design  
accuracy  
craftsmanship*

FOR BETTER SERVICE

## "CLEVELAND" FILTERS AND STRAINERS

No task too big — no problem too small for CLEVELAND strainers and filters. We design, build and produce strainers and filters for every purpose in any size or dimension or metal.

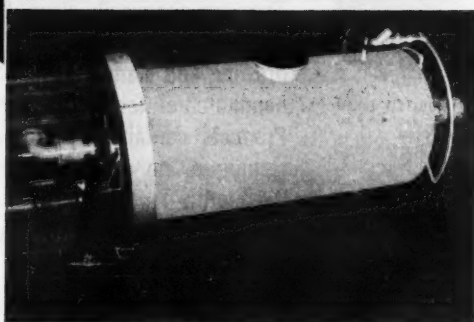
Easy to order — our engineers will help you to analyze your problem. Send us your requirements!

WRITE FOR BULLETIN NO. 7  
THE CLEVELAND WIRE CLOTH & MFG. CO.  
3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 8159 on handy form, pgs. 2-3

# DRYERS

**Renneburg  
Rotating  
Steam-jacketed  
Vacuum  
Batch  
Dryer**



**PROBLEM**—A leading chemical manufacturer needed a steam dryer to produce a new catalyst. Special plastic coatings and Hastelloy metal were specified to provide for continuous hydrochloric acid injection and fume removal. Full vacuum operation was necessary with uninterrupted steam intake and condensate removal.

**SOLUTION**—Within six weeks Renneburg engineers and craftsmen had designed and built the new dryer and placed it in operation. An unusual feat? No, routine with Renneburg.

**YOUR ANSWER**—When you have a dehydration problem, contact Renneburg—one of America's oldest and largest dryer manufacturers.

**EDW. RENNEBURG & SONS CO.**  
BALTIMORE 24, MARYLAND, U. S. A.

CONTINUOUS COOKERS, PRESSES, COOLERS, EVAPORATORS • OIL BURNERS • DEODORIZING EQUIPMENT

When inquiring check CP 8160 on handy form, pgs. 2-3

## NEW LITERATURE

### Precipitator units for paper mills

Designed for sodium salt recovery in soda and sulfate pulp mills, precipitator units feature wet bottom principle of operation. Operating on the electrostatic principle units make possible the recovery and utilization of sodium sulfate from flue gases of sulfate pulp mills and sodium carbonate from gases of soda mills.

Four-page bulletin details method of operation and principal features of construction by means of photos and drawings. "The Inside Story" is issued by Research Corp., Dept. CP, Bound Brook, N. J. When inquiring specify CP 8161 on handy form, pages 2 and 3.

### Illustrates features of vertical pumps

Illustrated with numerous cross-section drawings, bulletin shows mechanical and design features of complete line of vertical turbine pumps for handling gasoline, diesel fuel, crude oil, L-P gases, ammonia, and other volatile liquids. Chart summarizes four additional advantages of design with regard to economy of operation.

Bul 1026 is issued by Johnston Pump Co., Dept. CP, 3272 E. Foothill Blvd., Pasadena 8, Calif. When inquiring specify CP 8162 on handy form, pages 2 and 3.

### Inert nozzle lining resists corrosion

Saran-lined nozzles, differential producers without piezometer rings, feature Saran lining which permits their use with corrosive liquids and slurries. Pertinent information on uses and specification details of units is given in illustrated bulletin. List of corrosive liquids that can be metered with nozzle, as well as ratio chart and capacity table for obtaining capacities for liquids other than water are included.

Bul 130-J6 is issued by Builders-Providence, Inc., Dept. CP, 345 Harris Ave., Providence 1, R. I. When inquiring specify CP 8163 on handy form, pages 2 and 3.



## DON'T YOU GET CAUGHT ...with inadequate identification!

### COLOR ALONE is Not Enough!

Your pipes should be marked so that anyone can identify them at a glance — emergencies wait for no man.

Westline Tel-A-Pipes mark pipes in clear, easy-to-read wording — no color codes to memorize — no costly pipe painting or stenciling.

They cost a few cents and are applied in a second.

Tel-A-Pipes are printed signs with self-adhesive backing — stick and stay stuck to pipes without moistening — never curl off. More than 200 stock words or printed to your specifications. Write for complete details. Dept. CP-2

## WESTLINE Tele-A-Pipes

Division of Western Lithograph Company  
600 East Second Street • Los Angeles 54, California

When inquiring check CP 8164 on handy form, pgs. 2-3

## BRIEFS...

*from contemporary  
publications*

READ THEM... IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields... by reading the "BRIEFS" section of CHEMICAL PROCESSING every month.

Our Editors read more than 50 contemporary publications every month... select those articles they believe you will want to know about... and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service... to save you time... yet keep you informed. See "BRIEFS" in this issue, page 98.

**Gives features, specifications of pressure regulators**

Illustrated catalog deals with constant pressure differential regulator and instrument air pressure regulator units. Constant pressure differential regulator is a compact unit consisting of the air pressure regulator and a phenolic body meter piped together on a bracket for wall mounting, or with a bezel which permits front or rear panel mounting. Unit is used to regulate purge flows of liquid or gas, for liquid level measurement, or in dual arrangement serviceable for specific gravity measurement.

Air pressure regulator unit was developed especially for internal case mounting with manufacturer's pneumatic controller series. Unit features compact design with a pressure-balanced valve which maintains constant discharge pressure with very low droop.

Illustrated catalog gives features, specifications, and applications for both units. Cat 29 is issued by Fischer & Porter Co., Dept. CP, 749 Jacksonville Rd., Hatboro, Pa. When inquiring specify CP 8165 on handy form, pages 2 and 3.

**Describes improved instrument for spectrochemical analysis**

A report, compiled as a result of work done as a Navy research project, describes a fast, sensitive, and stable spectrophotometer for chemical analysis. According to bulletin, instrument's desirable characteristics are due in large part to an electronic servomechanism for balancing the solution and solvent light beams. Both light beams are "chopped" by a rotating disc into light pulses which produce a pulsed electrical current suitable for driving an alternating current type of balancing system.

Report describes optical system and range selecting arrangement, and discusses overall sensitivity, stability, and precision of the instrument. Bulletin is available in form of microfilm or photostat.

To obtain report, remit \$2.25 for microfilm form or \$5.00 for photostat (payable to Librarian of Congress) direct to Library of Congress, Photoduplication Section, Washington 25, D. C.

**Technical Supervision**

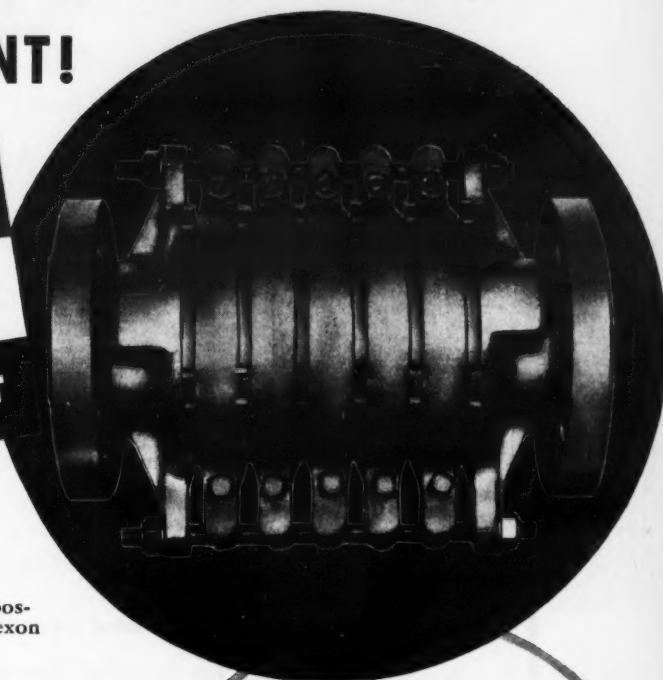
(Continued from page 5)

personnel relations, etc., are all a part of this job. The final measure of his effectiveness is the mill cost of the resulting product.

The technical supervisor, on the other hand, is primarily concerned with the search for modifications that can improve either cost or quality, or both. He works with the raw materials, equipment, and processing conditions to find the most satisfactory route to the end product.

(Continued on next page)

# Now you can have GREATER PIPE LINE MOTION CONTROL IN A MORE COMPACT, LESS COSTLY EXPANSION JOINT!

**THREE TYPES AVAILABLE**

**FREE FLEXING**—Available in sizes from 3" through 48" I.D. in copper or stainless steel. Suitable for pressures to 30 psi, temperatures from minus 100°F. to 800°F.

**CONTROLLED FLEXING**—(Illustrated above) Available in sizes from 3" through 48" I.D. in copper or stainless steel. Suitable for pressures to 300 psi, temperatures from minus 100°F. to 800°F.

**FLEXONIFLEX**—Integral ring type. Available in sizes from 1/2" pipe through 6" pipe. Suitable for pressures to 5500 psi, temperatures from minus 400°F. to 1600°F.

Continuing research and development at Flexonics Corporation have now made it possible to offer design improvements in Flexon Expansion Joints that provide three basic advantages:

1. The face-to-face (over-all) dimension of a joint to handle a given amount of expansion has been reduced.
2. The reduction in size results in a lower expansion joint cost to handle a given amount of motion.
3. Exhaustive tests prove that these joints provide a maximum of motion commensurate with optimum life.

Coupled with such accepted advantages as compactness, ease of installation and freedom from maintenance, these additional advantages make Flexon Expansion Joints the most satisfactory method of controlling pipe line motion for the majority of installations.

Complete specifications are given in the new Flexon Expansion Joint Bulletin. Check this data before you select or specify expansion joints for your plant. Write for your copy, today.

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EXPANSION JOINT DIVISION  
FORMERLY CHICAGO METAL HOSE CORPORATION  
In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

Flexon identifies products of Flexonics Corporation that have served industry for over 50 years.



Flexible metal hose



Expansion joints.



Metallic bellows

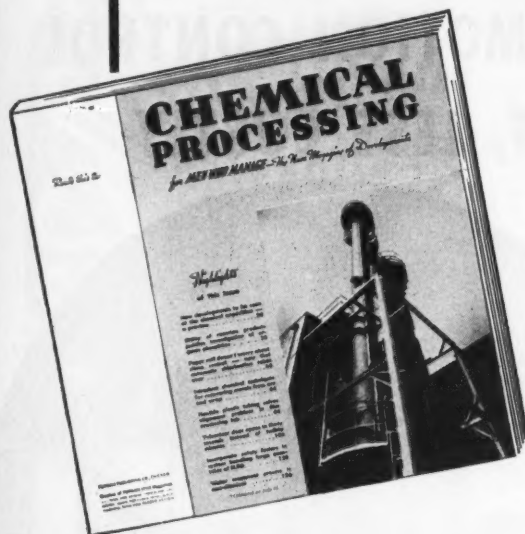


Aircraft components

When inquiring check CP 8166 on handy form, pgs. 2-3



Have you ever wondered . . . ?



## How this magazine comes to you . . . why there's no charge for it ???

Maybe, like many others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

No, 'tisn't so. With the exception of a few general magazines (e.g. *READER'S DIGEST*) that sell hundreds of thousands —

some millions of copies — most industrial publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.

### Advertisers demand best coverage

Since advertisers pay the bills, they demand best possible coverage of **ALL** important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

. . . And you can't do that by selling subscriptions — sales costs are high — a large share of the subscribers cancel each year — and no matter how much time, money, and pressure is used there are always some of the important men who will never buy.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to hand-pick the most important men; (b) send the magazine to **ALL** these men; and (c) to make the magazine so interesting, so valuable that they will want to read it.

That's why . . .

That's why *CHEMICAL PROCESSING* is sent only to qualified readers . . . selected management and technical key-men in the chemical industry; that's why you get *CHEMICAL PROCESSING* free — that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the chemical processing field.

**CHEMICAL PROCESSING**  
Published by PUTMAN PUBLISHING COMPANY

Creators of PUTMAN-STYLE Magazines  
. . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more **READER ACTION**

(Continued from preceding page)

We feel that both men have the same objective and are faced with the same broad challenge. One is primarily concerned with the use of facilities already provided to reach the objective. The other is interested in finding ways to change any or all elements of the process in order to establish new and higher standards of operating efficiency and product quality. Obviously, operating and technical supervision must work in close and continuing harmony.

The technical supervisor must perform the following functions: 1) collect and assimilate facts relating to the process, 2) solve the unknowns in a process and coordinate plant and laboratory activity, 3) understand the interplay of variables in a process and develop means of controlling them to establish optimum conditions of operation, and 4) transmit technical information to operating supervision and promote its effective and prompt application in the plant.

To discharge these responsibilities, the technical man cannot live within the four walls of a laboratory. Much of his time must be spent in the plant so that he will know it almost as thoroughly as the operating supervisor knows it. His constructive investigations demand a full knowledge of the tools used and their advantages or disadvantages.

Did we begin by stating that chemists and chemical engineers in our plants are specialists? Yes. But many have, to our mutual benefit, acquired a variety of valuable supplementary skills which can be described as "know-how to get the job done." This know-how pays off to such an outstanding degree that it is one of Hercules' most valuable production assets. Wherever it is found, it is cultivated with the greatest care.

This, then, is a brief sketch of our program to meet the production challenge. It is the basic formula we use to combine men, equipment, money, and engineering know-how to yield the sum of satisfied customers plus a profit.

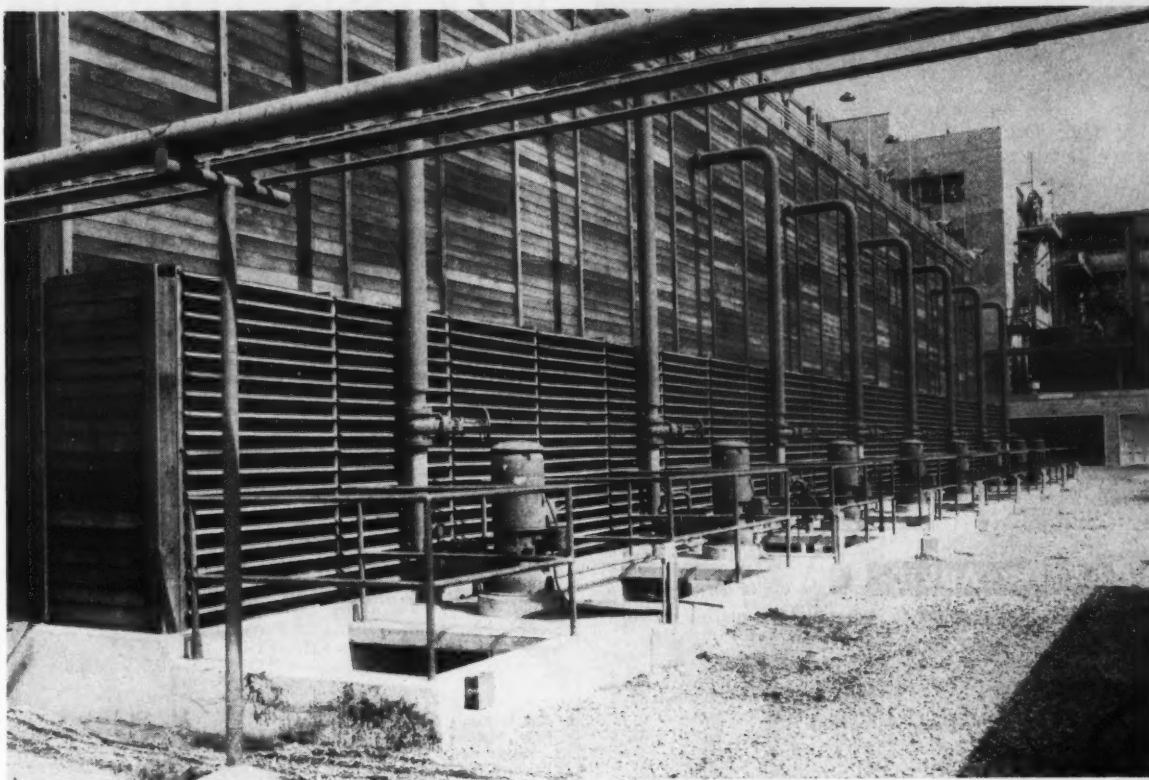
### Solution to puzzle on page 125

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## Convention & Exhibit Schedule 1953

- Feb. 18.* Instrument Society of America, New York Section, Sixth Annual Regional Meeting, Hotel Statler, New York City, N. Y.
- Feb. 26-27.* Manufacturing Chemists' Association, Inc., conference on air pollution abatement, Hotel Statler, Detroit, Mich.
- Mar. 8-11.* American Institute of Chemical Engineers, Buena Vista Hotel, Biloxi, Miss.
- Mar. 15-19.* American Chemical Society, 123rd National Meeting, Los Angeles, Calif.
- Mar. 17-20.* National Association of Corrosion Engineers, Protective Coating Symposium, Hotel Sherman, Chicago, Illinois.
- Mar. 23-24.* Commercial Chemical Development Ass'n, annual open meeting, Hotel Statler, New York, N. Y.
- Apr. 13-15.* American Society of Lubrication Engineers, Annual Meeting and Exhibit, Hotel Statler, Boston, Mass.
- Apr. 20-23.* American Management Association, 22nd National Packaging Exposition, Navy Pier, Chicago, Ill.
- Apr. 21.* Association of Consulting Chemist and Chemical Engineers, Inc., Symposium, Hotel Belmont Plaza, New York City, N. Y.
- May 1.* American Association of Spectrographers, Symposium, Chicago, Illinois.
- May 4-6.* American Oil Chemists' Society, 44th Annual Meeting, Roosevelt Hotel, New Orleans, Louisiana.
- May 5.* American Institute of Chemical Engineers, Fourth Annual All Day Symposium, Essex House, Newark, N. J.
- May 9-15.* The Society of the Plastics Industry, Inc., Annual Meeting and Conference, Cruise to Bermuda.
- May 14-23.* International Petroleum Exposition, 30th Anniversary, Tulsa, Oklahoma.
- May 18-22.* The Material Handling Institute, Inc., Fifth National Materials Handling Exposition, Convention Hall, Philadelphia, Pa.
- June 15-19.* Exposition of Basic Materials for Industry, Grand Central Palace, New York, N. Y.
- Sept. 13-16.* American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, Calif.
- Sept. 17-19.* American Association of Textile Chemists and Colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.
- Sept. 21-25.* Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.
- Oct. 26-27.* National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.
- Oct. 27.* Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York City, N. Y.
- Nov. 2-4.* American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.

## In small plants and large...



## JOHNSTON VERTICAL TURBINE PUMPS ARE SERVING THE CHEMICAL INDUSTRY

Take this cooling tower job in a Los Angeles soap factory for example. There are sixteen Johnston close-coupled turbine pumps installed here . . . Eight of them delivering water to the tower—while eight are returning cooled water to the plant system.

The firm which engineered and constructed this modern factory selected Johnston Pumps, because . . .

- Large savings were effected on installation costs.
- Higher efficiency meant lower operating costs.
- Single pump units can be shut down without impairing plant operation.
- The flat horsepower curve of the Johnston vertical turbine pump allows operation

against throttled discharge or reduced heads without overloading the driver.

- Vertical, hydraulically balanced design eliminates radial thrust and consequent bearing and impeller wear, thus cutting maintenance costs to the bone.
- There are no packing boxes to maintain—an extra long throttle bearing and by-pass in the discharge case make a packing gland or mechanical seal unnecessary.

This is another typical example of the ability of Johnston equipment to handle all types of pumping jobs in plant operations, large or small. Why not let our trained engineering staff consult with you on the best solution to YOUR particular problem?



Send today for your free copy of our new bulletin describing Johnston close-coupled, vertical turbine pumps designed for industrial service. Ask for Bulletin D-23.



## JOHNSTON PUMP COMPANY

3272 E. FOOTHILL BLVD. PASADENA 8, CALIFORNIA

When inquiring check CP 8167 on handy form, pgs. 2-3



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**AGILENE** (Specially Selected Grades of Polyethylene for highest corrosion resistance.)

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We invite your inquiries and will be pleased to furnish you literature, prices, delivery, etc. for fabrications built to your own specifications, as well as on sheets, tubing, ducting, etc.



**American Agile Corporation**

Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio  
Mailing Address, P. O. Box 168 • Bedford, Ohio

When inquiring check CP 8168 on handy form, pgs. 2-3

# Discussed in This Issue--- PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pages 2 and 3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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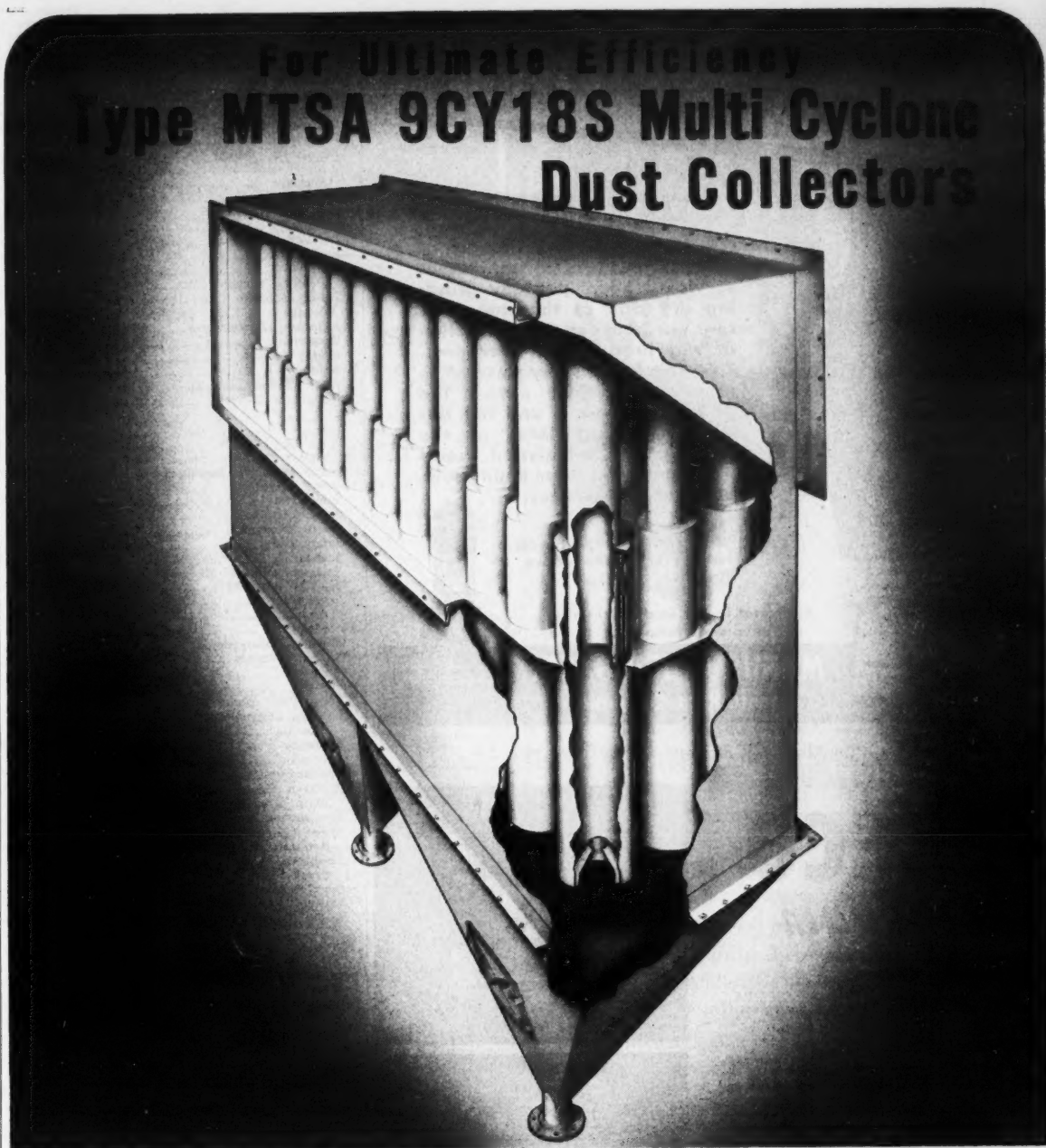
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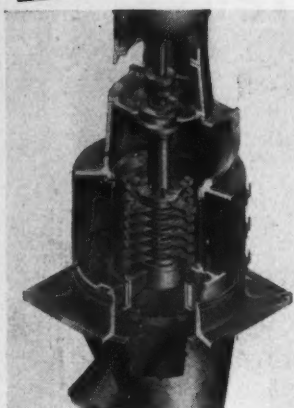
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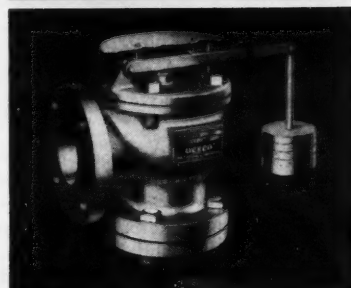
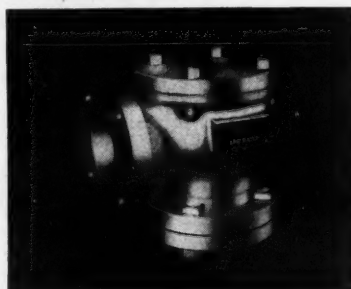
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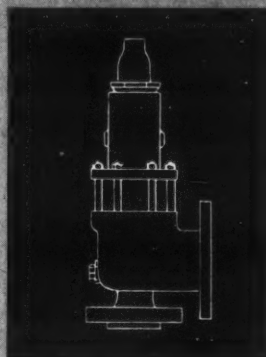
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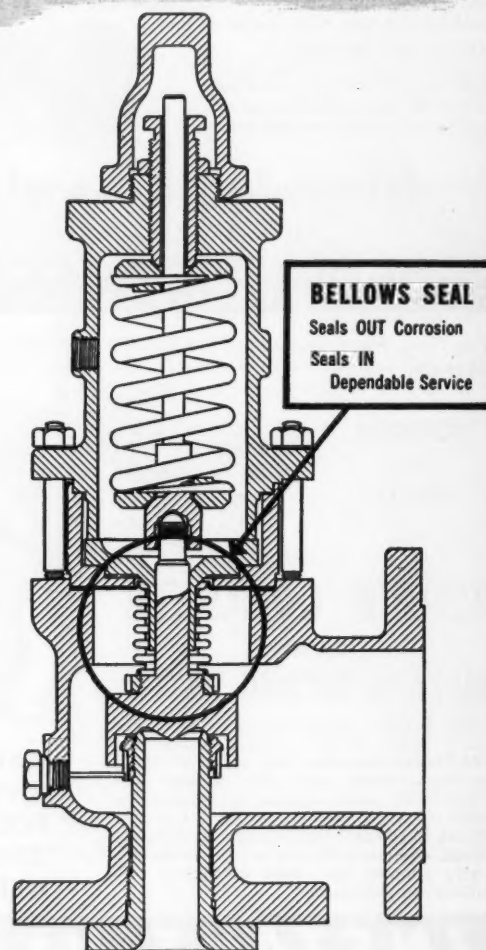
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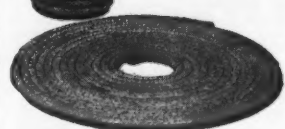
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CHEMICAL PROCESSING

## "That's Interesting"

### In an idle half hour — 5 x 10<sup>9</sup> years ago

All known kinds of matter in the universe were created simultaneously about five billion years ago, according to Prof. Edward McCrady in his address to a regional meeting of ACS in Little Rock, Arkansas.

The conclusion that all elements came into existence within about a half an hour or so was based on recent calculations involving the radioactive decay of uranium. Dr. McCrady stated that since lead isotope 207 or uranium 235 did not exist more than five billion years ago, it follows that there could have been no chemical elements at all before that time.

### Radiant wallpaper for home heating

An electrical radiant heating panel which can be cemented to the ceiling like wallpaper is a recent contribution to home heating of the United States Rubber Co., New York 20, N.Y. The lightweight panel is called Uskon and uses a sheet of conductive rubber, sandwiched between layers of plastic and aluminum foil, as the heating unit.

In addition to saving the space occupied by radiators, furnaces, etc., the relatively inexpensive panels may be attached to ceilings without cutting, rebuilding, plastering or other structural changes. They operate from 115 or 230 v outlet and may be equipped with thermostatic control for individual room heating.

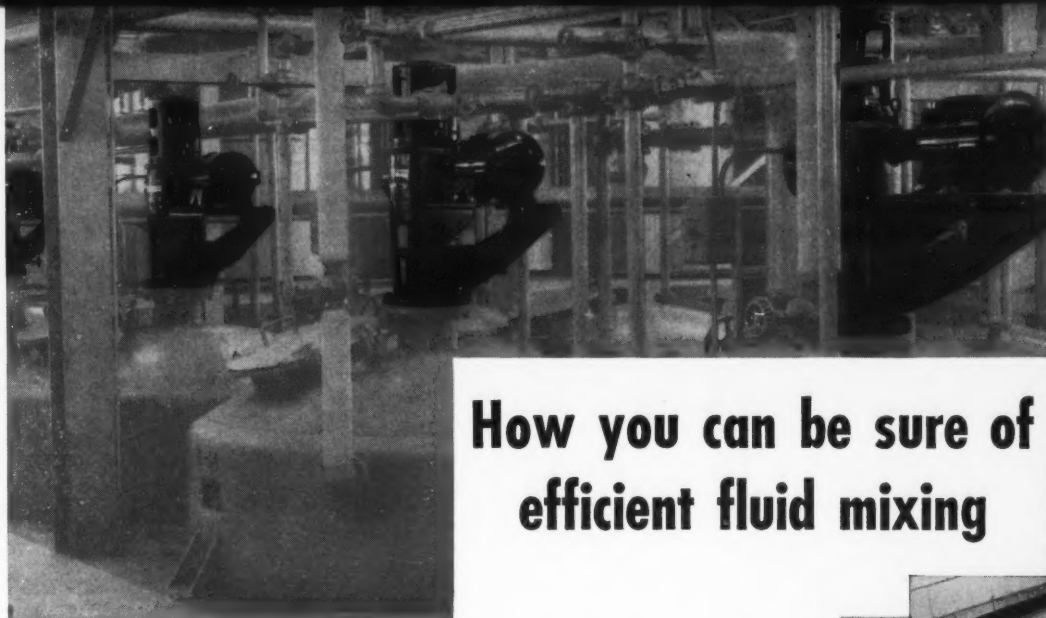
### Missiles with bristles

A cylindrical Nylon-bristled brush has been designed for the specific purpose of cleaning steam condenser tubes. The brush is shot through the tube by a compressed air gun to provide a thoroughly clean tube. (*The Ohmite News*)

### Pencil's lead will bend without breaking

A plastic binder has been incorporated into the lead of colored drafting pencils that imparts pliable strength without affecting the pencils' marking qualities. The lead will bend without breaking and deposits color like a soft crayon. Available in 24 colors, the pencil can be easily sharpened and will stand up under pressure like a firm graphite lead. (Koh-I-Noor Pencil Co., 10 Railroad Ave., Bloomsbury, N. J.)

For more information on product at right, specify CP 8180 . . . see information request blank between pages 2 and 3.



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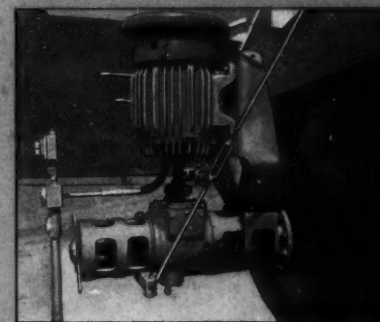
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## Uses of RCI Products

**BRAKE LININGS:** PLYOPHEN powdered phenolic resins.

**CANVAS, PAPER AND GLASS CLOTH LAMINATES:** PLYOPHEN cresol, phenolic and resorcinol-formaldehyde resins and varnishes; LAMINITE polyester resins.

**CASTINGS:** FOUNDREZ powdered phenolic resins (for the shell molding process); FOUNDREZ liquid phenolic resins and FOUNDREZ core oils (for core binders).

**FURNITURE, PLYWOOD, FLOORING, HARDWOOD AND CHIPBOARD:** HYDROPHEN phenolic glues; PLYACIEN protein glues; PLYAMINE urea-formaldehyde glues; PLYOPHEN phenolic and resorcinol-formaldehyde glues.

**GRINDING WHEELS:** PLYOPHEN powdered phenolic resins.

**INSULATION:** PLYOPHEN liquid phenolic resins (for binding fibre glass and rock wool batts).

**MOLDING COMPOUNDS:** PLYOPHEN powdered phenolic resins.

**PAINTS, VARNISHES AND LACQUERS:** BECKACITE (1) fumaric, (2) maleic and (3) modified phenolic resins; BECKAMINE urea-formaldehyde resins; BECKOLIN synthetic oils; BECKOPOL modified phenolic resins; BECKOSOL (1) phenolated, (2) phthalic-free, (3) rosin modified, (4) pure drying and (5) pure non-drying alkyd resins; KOPOL processed Congo copals; PENTACITE pentaerythritol resins; STYRESOL styrenated alkyd resins; SUPER-BECKACITE pure phenolic resins; SYNTHETOPAL ester gums; WALLKYD pure drying alkyd resins (for alkyd flat wall vehicles); WALLPOL vinyl-type copolymer latex emulsions (for latex flat wall coatings); RCI inorganic chemical pigment colors.

**PAPER:** BECKAMINE urea-formaldehyde resins (for adding wet strength, improving the wet rub of starch-clay coatings, and waterproofing starch adhesives); RCI inorganic chemical pigment colors (for paper coloring); STYRESOL styrenated alkyd resins (for paper coating).

**PRINTING INKS:** BECKACITE fumaric, maleic and modified phenolic resins; BECKOLIN synthetic oils; BECKOPOL modified phenolic resins; RCI inorganic chemical pigment colors.

**TEXTILES:** FABREZ urea-formaldehyde resins (for crush-proofing and dimensional stabilization).

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